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วัตถุประสงค์ของวารสาร

วารสารมีวัตถุประสงค์เพื่อส่งเสริมและเผยแพร่ผลงานวิชาการและงานวิจัยที่มีคุณค่าต่อการพัฒนาองค์ความรู้ทางเศรษฐศาสตร์และสาขาที่เกี่ยวข้อง รวมถึงเป็นสื่อกลางในการแลกเปลี่ยนองค์ความรู้ ทฤษฎี และข้อคิดเห็นเชิงวิชาการในหลากหลายมิติ อาทิเช่น เศรษฐศาสตร์การพัฒนา เศรษฐศาสตร์การเมือง เศรษฐศาสตร์เกษตรและสิ่งแวดล้อม การเงิน พฤติกรรมองค์กร ระบบสหกรณ์ ระหว่างประเทศ การท่องเที่ยว การพัฒนาสังคมและชุมชน ตลอดจนด้านการบริหารและการจัดการ

วารสารมุ่งเน้นการส่งเสริมและเผยแพร่องค์ความรู้ทางเศรษฐศาสตร์สู่แวดวงวิชาการและสังคม เพื่อให้เกิดการพัฒนาและประยุกต์ใช้ความรู้ทางเศรษฐศาสตร์อย่างเหมาะสม โดยมีเป้าหมายในการสร้างผลกระทบเชิงบวกต่อชุมชน สังคม และภาคนโยบายในวงกว้าง

ประเภทของผลงานวิชาการที่จะรับ

1. บทความวิชาการ (Academic Article)
2. บทความวิจัย (Research Article)

ขอบเขตของวารสารเศรษฐศาสตร์ มหาวิทยาลัยแม่โจ้

วารสารเศรษฐศาสตร์ มหาวิทยาลัยแม่โจ้ เผยแพร่บทความทั้งภาษาไทยและภาษาอังกฤษ โดยบทความที่จะได้รับการตีพิมพ์ต้องมีเนื้อหาที่เกี่ยวข้องกับเศรษฐศาสตร์ในหลายมิติและการพัฒนาสังคมและชุมชนและการจัดการ (การบริหารและการจัดการ) ต้องนำเสนอให้เห็นถึงการสร้างสรรค์องค์ความรู้ทางวิชาการที่มีประโยชน์และน่าสนใจ รวมถึงการนำเสนอผลการวิจัยที่เป็นปัจจุบัน เป็นประโยชน์ต่อแวดวงวิชาการและวิชาชีพ และบทความจะผ่านการพิจารณากลั่นกรองโดยผู้ทรงคุณวุฒิที่มีความรู้ความสามารถในสาขาที่บทความนั้นเกี่ยวข้องและสัมพันธ์กัน โดยขอบเขตเนื้อหาทางวิชาการของบทความที่จะเผยแพร่ในวารสารเศรษฐศาสตร์ มหาวิทยาลัยแม่โจ้ จะต้องมีเนื้อหาครอบคลุมในด้าน ดังต่อไปนี้

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- ด้านเศรษฐศาสตร์การเมือง
- ด้านเศรษฐศาสตร์เกษตร
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- ด้านการพัฒนาสังคมและชุมชน
- ด้านการจัดการ (การบริหารและการจัดการ)

ที่ปรึกษา

กำหนดการออก

วารสารเศรษฐศาสตร์ มหาวิทยาลัยแม่โจ้ มีกำหนดออกปีละ 2 ฉบับ คือ

ฉบับที่ 1 ระหว่างเดือนมกราคม - เดือนมิถุนายน

ฉบับที่ 2 ระหว่างเดือนกรกฎาคม – เดือนธันวาคม

พิมพ์ที่

คณะเศรษฐศาสตร์ มหาวิทยาลัยแม่โจ้

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บทบรรณาธิการ

วารสารเศรษฐศาสตร์ มหาวิทยาลัยแม่โจ้ ปีที่ 4 ฉบับที่ 2 ประจำเดือนกรกฎาคม – ธันวาคม 2567 นำเสนอผลงานวิจัยคุณภาพจำนวน 5 บทความ ซึ่งสะท้อนประเด็นทางเศรษฐศาสตร์ในหลากหลายมิติ อาทิ เศรษฐศาสตร์การพัฒนา เศรษฐศาสตร์การเมือง เศรษฐศาสตร์เกษตรและสิ่งแวดล้อม การเงิน พฤติกรรมองค์กร ระบบสหกรณ์ เศรษฐศาสตร์ระหว่างประเทศ การท่องเที่ยว ตลอดจนการพัฒนาสังคมและชุมชน รวมถึงการบริหารและการจัดการ

กองบรรณาธิการขอแสดงความขอบคุณเป็นพิเศษต่อผู้ทรงคุณวุฒิทั้งภายในและภายนอกมหาวิทยาลัย ที่ได้ให้ความอนุเคราะห์ในการพิจารณาและให้ข้อเสนอแนะอันทรงคุณค่าเพื่อพัฒนาคุณภาพบทความ รวมถึงขอขอบคุณผู้นิพนธ์บทความที่ให้ความไว้วางใจและส่งผลงานวิจัยเพื่อตีพิมพ์ในวารสารของเรา

กองบรรณาธิการมีความมุ่งมั่นในการรักษามาตรฐานทางวิชาการและการเผยแพร่องค์ความรู้ เพื่อส่งเสริมความก้าวหน้าในแวดวงเศรษฐศาสตร์และสาขาที่เกี่ยวข้อง หวังเป็นอย่างยิ่งว่าบทความที่ได้รับการคัดสรรในฉบับนี้จะเป็นประโยชน์แก่ผู้อ่าน ตลอดจนกระตุ้นให้เกิดการแลกเปลี่ยนองค์ความรู้และข้อคิดเห็นทางวิชาการต่อไป สุดท้ายนี้ขอขอบคุณทุกฝ่ายที่มีส่วนร่วมในการสนับสนุนให้วารสารฉบับนี้ได้รับการเผยแพร่อย่างสมบูรณ์และมีคุณภาพ

ผู้ช่วยศาสตราจารย์ ดร.กฤตวิทย์ อัจฉริยะพานิชกุล
บรรณาธิการ

ทัศนะและข้อคิดเห็นของบทความในวารสารฉบับนี้เป็นของผู้นิพนธ์แต่ละท่าน
ไม่ถือเป็นทัศนะและความรับผิดชอบของกองบรรณาธิการ

สารบัญ

บทความวิจัย

วารสารเศรษฐศาสตร์ มหาวิทยาลัยแม่โจ้

Journal of Economics Maejo University

Tourist Behavior and Multi-Attractions in Khon Kaen Province

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Abstract

The purposes of this study were to examine the behavior of tourists who have traveled to Khon Kaen province and to study multi-attraction visits in Khon Kaen Province, which is currently ranked second in the Northeastern region for visitor numbers and tourism income. The study population consisted of tourists who have traveled to Khon Kaen province. This research identified the most popular attractions taken by tourists from one attraction to another. Using primary data collection methods, the study found that the five most popular tourist attractions were Central Plaza Khon Kaen, Wat Nong Wang, Ubolratana Dam, Ton Taan Market, and Khon Kaen Zoo. The data was analyzed using descriptive statistics for general information and tourist behavior, and inferential statistics for tourist attraction sequences through Social Network Analysis (SNA) using the UCINET program to demonstrate the travel network within Khon Kaen Province. The study revealed that Central Plaza Khon Kaen was the central tourism attraction, with tourists typically traveling from there to Ton Taan Market, Ubolratana Dam, Wat Nong Wang, and Khon Kaen Zoo. The findings regarding tourist travel patterns can inform policy planning for tourism supply and development, including linking tourism programs, integrating attractions, clearly defining tourist areas, planning transportation systems, developing travel infrastructure, and maintaining roads and traffic connections between attractions, all to further develop Khon Kaen's tourism potential.

Keywords: Tourist Behavior; Social Network Analysis; Khon Kaen Tourism: Multi-Attractions

1. Introduction

Tourism is a service industry that plays an important role in the Thai economy, accounting for the majority of all trade services. It generates continuing businesses such as hotels, lodgings, restaurants, souvenir stores, and local goods, leading to investment, employment, and income distribution to locals while bringing in hundreds of billions of baht in foreign currency. Contributing 4.8% to the gross domestic product, the tourism sector provides significant economic value. Tourism is considered the primary source of income for the Thai economy (Department of industrial promotion, 2004). In 2019, tourism accounted for 16% of GDP, with income from foreign tourists representing 10% of GDP and 61% of all tourism revenue. However, in 2020, foreign tourists were unable to enter Thailand due to the COVID-19 pandemic. The number of foreign tourists contracted by 80% to 8.1 million people compared to 2019, prompting the government to stimulate domestic tourism to compensate for the decrease in foreign visitors (Rueanthip and Laosamrit, 2020).

Khon Kaen province has experienced continuous population growth and territorial expansion. With Khon Kaen University located in the middle of the northeast, the province has become a regional educational and technological hub. The Mueang district offers numerous services, natural resources, public facilities, and varied accommodation options at different price points to serve tourists. The strategically located airport provides convenient and time-saving travel options. These factors, combined with the province's long history, contribute to its tourism potential. Consequently, Khon Kaen has emerged as a significant tourist destination in modern Thailand.

According to the Ministry of Tourism & Sports (2023), Khon Kaen ranks second in tourist arrivals in the northeastern region. The province welcomed 4,556,656 Thai tourists in 2018 and 5,583,809 in 2019. However, due to the COVID-19 pandemic in 2020, the number of Thai tourists declined to 2,920,357. The downward trend continued into 2021, with tourist numbers further decreasing to 1,387,695 as most visitors remained concerned about travel during the pandemic. In 2023, as COVID-19 cases decreased, tourist numbers recovered to 3,512,879 visitors. The pandemic caused major disruption to the tourism industry during 2020-2021, with many businesses losing revenue and struggling to recover. While tourist numbers decreased significantly during the height of the pandemic due to safety concerns, tourism began returning to normal levels in 2022 as the pandemic subsided.

Khon Kaen features several significant tourist attractions that should be preserved, including Phra Mahathat Kaen Nakhon, Khon Kaen Zoo (Khao Suan Kwang), and Ubolratana Dam. Given their importance, studying multi-attraction travel patterns in Khon Kaen presents an interesting research opportunity to identify the most popular travel routes. By examining tourist behavior, travel routes, and planning patterns, this research aims to provide guidelines for developing tourism areas in Khon Kaen. This study implements multi-attraction research

to examine the connections between various tourist attractions. According to Tansiri and Srikeaw (2021), who studied tourist behavior and tourism network connections, key factors influencing tourist decisions included income levels, average accommodation costs, choice of transportation, frequency of visits, and time spent at different attractions. Their research found that these factors had similar impacts on tourist decision-making.

2. Research Objectives

2.1 To examine the behavior of tourists who have traveled to Khon Kaen Province.

2.2 To study the pattern of multi-attraction visits in Khon Kaen Province.

3. Research Methodology

3.1 Population and Sample size

The population in this study consists of tourists who have traveled to Khon Kaen. The sample size is 207, determined using the G*Power program. The calculation method, developed by Cohen (1977), is specifically designed for estimating sample sizes when the exact population size is unknown.

3.2 Data collection

3.2.1 The scope of data collection focuses on gathering accurate information to avoid distortion. This is achieved by distributing a quantitative primary data questionnaire to residents of Khon Kaen and tourists who have visited the city.

3.2.2 The data collection method involves developing a quantitative data collection tool using Google Forms. This tool is used because it enables convenient and efficient data collection while allowing for data interpretation in various formats. There are two steps to collect primary data:

1) Step 1: Identifies the top five attractions in Khon Kaen that people want to visit. This questionnaire uses multiple-choice questions and serves as a basis for creating a questionnaire for step 2.

2) Step 2: Gathers general information and data on tourist behavior.

3.3 Data Analysis

3.3.1 Descriptive Statistics

Descriptive statistics are used to present the collected data on general information and tourist behavior of the respondents. These statistics describe the characteristics of the data using frequency to calculate percentages, central tendency to determine the mean, median, and mode, and measures of variation, including the standard deviation.3.3.2 Social Network Analysis (SNA)

3.3.2 Social Network Analysis (SNA)

Social Network Analysis (SNA) is used to analyze data characterized by networks of associations that represent relationships within a dataset. SNA involves examining social structures using networks and graph theory. It describes networked structures through nodes, which represent individual actors, people, or entities within the network, and ties, edges, or links, which signify the relationships or interactions connecting them (Wikipedia, 2024). The primary goal of SNA is to identify central points in social networks, known as centrality. SNA is widely utilized in research and development to study diverse and extensive social networks. Additionally, the UCINET program was employed for tools used in Social Network Analysis.

Degree centrality refers to the tourist attractions that are most frequently connected to other tourist centers. A tourist attraction with high centrality is regarded as a central hub within the network. Such a destination is a central location or major channel with the most connections to other tourist destinations. This means that a destination serves as a hub or gateway to other destinations, and the destination is well-connected in terms of travel routes. The degree centrality can be calculated using the following mathematical equation (1) (Wasserman and Faust, 1994)

$$C_D(n_i) = \sum_j x_{ij}$$

(1) where $C_D(n_i)$ is the degree of centrality index for destination i, and x_{ij} represents the connection (number of tourist flows) between destination i and destination j.

4. Research Findings Summary

The results of the study are divided into two parts: 4.1 The results of descriptive statistics on general information and tourist behavior. 4.2 The results of social network analysis for multi-attraction tourist visits.

4.1 The Results of Descriptive Statistics on General Information and Tourist Behavior

Table 1 presents the findings on the general information of tourists. The study included 207 tourists who visited Khon Kaen Province. The majority were female (61.2%), followed by male (32.5%), and unspecified gender (6.3%). Most tourists were aged 20–29 years (82.6%), followed by those under 20 years of age (7.2%). The next largest groups were tourists aged 50–59 years (6.3%), 30–39 years (2.9%), and 40–49 years (1%). In terms of income, the majority earned less than 15,000 baht (64.7%), followed by those earning more than 30,000 baht (13%). Other income brackets included 15,001–20,000 baht (11.6%) and 20,001–30,000 baht (10.6%). Regarding education, most tourists held a bachelor's degree (87.4%), followed by those with a high school diploma (8.7%), a master's degree (2.9%), and a doctorate degree (1%).

		Percentage
Gender		
	Male	32.5
	Female	61.2
	Unspecified	6.3
Age		
	Under 20 years	7.2
	20-29 years	82.6
	30-39 years	2.9
	40-49 years	1
	50-59 years	6.3
Income		
	Less than 15,000 THB	64.7
	15,001-20,000 THB	11.6
	20,001-30,000 THB	10.6
	More than 30,000 THB	13
Education		
	High school diploma	8.7
	Bachelor degree	87.4
	Master degree	2.9
	Doctoral degree	1

Table 2 Behavior of tourists traveling in Khon Kaen Province

Table 2 presents the results of the study on the behavior of tourists traveling in Khon Kaen Province. The study included 207 tourists, with the majority traveling for relaxation (83.6%), followed by visiting friends or relatives (37.2%) and attending meetings or seminars (20.8%). Most tourists traveled from other provinces (66.2%), followed by those from other districts within Khon Kaen Province (31.9%) and from abroad (1.9%). In terms of transportation, the majority traveled by private car (66%), followed by public buses (24.8%) and airplanes (9.2%). Regarding group size, most tourists traveled in pairs (25.2%), followed by those traveling alone (23.8%) and groups of four (17.5%). The people accompanying the tourists were primarily family members (42%), followed by friends (34.5%) and partners (9.2%).

Most tourists visited Khon Kaen more than five times (71.5%), followed by 3–4 visits (12.1%) and 1–2 visits (11.6%). The duration of stay was typically 1–2 days per trip (51.2%), followed by single-day trips (16.9%) and 3–4-day trips (14.7%). In terms of travel timing, the majority visited on weekdays (35.5%), followed by holidays (23.7%) and weekends (14.1%).

When choosing Khon Kaen as a destination, most tourists cited convenient transportation (75.8%), followed by its reputation (59.9%) and beauty (52.7%). While in Khon Kaen, the majority of tourists traveled by private car (69.6%), followed by private motorcycles (26%) and hired vehicles (19.3%). In terms of spending, most tourists spent over 5,000 baht (33%), followed by 2,001–3,000 baht (22.9%) and 1,001–2,000 baht (17.1%). Tourists found traveling within Khon Kaen convenient due to the ease of transportation (66.7%) and the availability of hired buses (14%). However, some found it inconvenient because locations were far apart (10.1%). The majority of tourists (91.3%) would recommend Khon Kaen to others, while 8.7% would not.

		Percentage
Purpose of travel		
	Relaxation	83.6
	Business	12.6
	Government work	3.4
	Visiting friends/Visiting relatives	37.2
	Meeting/Seminar	20.8
	Study/Work	3.4
Where did you come from?		
	Other provinces	66.4
	Lives in Khon Kaen	31.7
	Abroad	1.9
How did you travel to Khon Kaen Province?		
	Public bus	24.8
	Private car	66
	Airplane	9.2
How many people are joining this trip?		
	1 person	23.8
	2 people	25.2
	3 people	16
	4 people	17.5
	5 people	2.9
	More than 5 people	14.6

If there are people traveling with you How are those people related to you?		
	Family	42
	Friend	34.8
	Sweetheart	9.2
	Relative	6.3
	Colleague	5.7
	None	1.1
	All of the above	0.6
How many times have you traveled to Khon Kaen?		
	1 time	4.8
	1-2 times	11.6
	3-4 times	12.1
	5 or more times	71.5
Length of stay per trip		
	1 day	16.9
	1-2 days	51.2
	3.4 days	14.7
	More than 5 days	14.5
Characteristics of the date you travel to Khon Kaen Province		
	Weekday	35.5
	Holiday	23.7
	Weekend	14.1
Deciding on a tourist destination		
	Beauty	52.7
	Convenient to travel	75.8
	Cheap products	42.5
	Reputable	59.9

How to travel to other attractions in Khon Kaen?		
	Personal motorcycle	26.1
	Private car	69.6
	Motorcycle for hire	9.2
	Taxi	13.5
	Car for hire	19.3
	Public shuttle	4.3
How much money do you spend on traveling in Khon Kaen Province?		
	500-1,000 THB	10.5
	1,001-2,000 THB	17.1
	2,001-3,000 THB	22.9
	3,001-4,000 THB	11.9
	4,001-5,000 THB	4.3
	More than 5,000 THB	33.3
Is it convenient for you to travel within Khon Kaen Province from one place to another?		
	Convenient because there are buses for hire.	14
	Convenient because it is easy to travel	66.7
	Convenient because there are cheap rental cars.	4.8
	Inconvenient because the number of rental cars is not enough.	3.9
	Inconvenient because each location is far apart.	10.1
	Inconvenient because rental cars are expensive.	0.5
If someone you know asks you about Khon Kaen Province, Would you recommend that those people visit or not?		
	Recommend	91.3
	Not Recommended	8.7

Table 2 Behavior of tourists traveling in Khon Kaen Province

4.2 The Results of Social Network Analysis for Multi-attraction tourist visits

4.2.1 Results from the questionnaire on the top five of Khon Kaenattractions

The tourist attractions that people want to visit in Khon Kaen Province were assessed using a multiple-choice format in step 1. The findings reveal that Central Khon Kaen received the highest preference at 50.3%, followed by Ubolratana Dam at 44.5%, Ton Taan Market at 43.9%, Wat Nong Wang at 40.6%, and Khon Kaen Zoo at 40%, as shown in Figure 1. This information about the five most popular tourist attractions was used to design the questionnaire in step 2

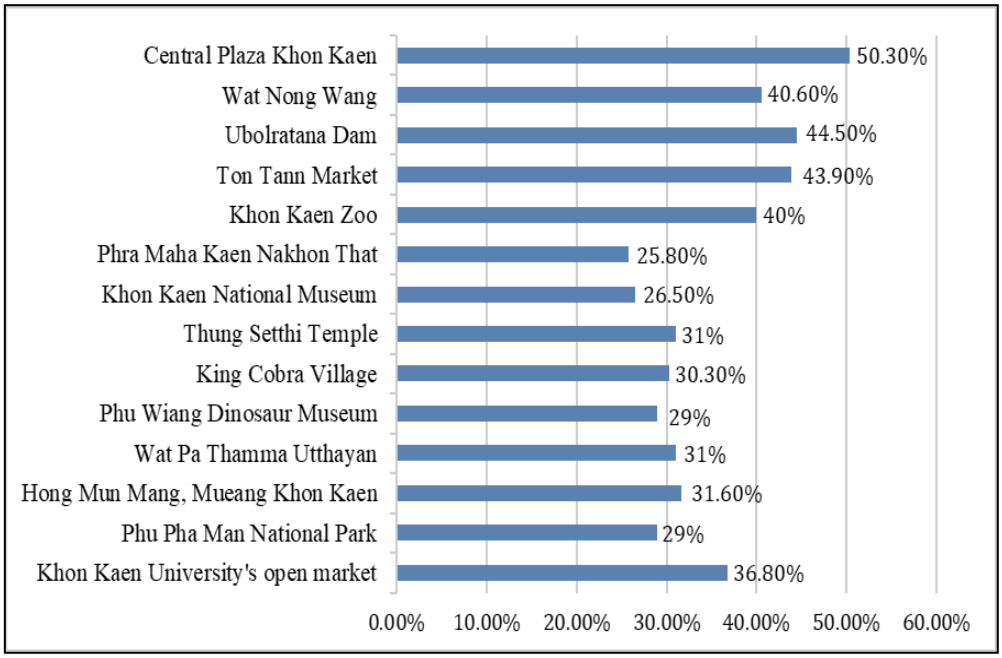

Figure 1 The top five of Khon Kaen attractions that people want to visit Khon Kaen province

4.2.2 Results of Social Network Analysis

From the five most popular tourist attractions, the travel patterns of tourists visiting Khon Kaen Province were analyzed using social network analysis. Based on the degree centrality results of the social network analysis in Table 3, it was found that Central Khon Kaen had the highest degree centrality value at 262. This was followed by Ton Taan Market with a value of 175, Ubolratana Dam at 170, Wat Nong Wang at 150, and Khon Kaen Zoo at 141. These results indicate that tourists tend to travel to key attractions of interest, with Central Khon Kaen being the most visited location, as it has the highest Degree Centrality value. This is followed by Ton Taan Market, Ubolratana Dam, Wat Nong Wang, and Khon Kaen Zoo, in descending order of their Centrality values. Figure 2 illustrates the travel patterns of multi-attraction tourism in Khon Kaen, constructed based on the degree of centrality using the UCINET program.

Attractions	Degree centrality
Central Plaza Khon Kaen	262
Ton Tann Market	175
Ubolratana Dam	170
Wat Nong Wang	150
Khon Kaen Zoo	141

Table 3 The results of the social network analysis of travel to tourist destinations.

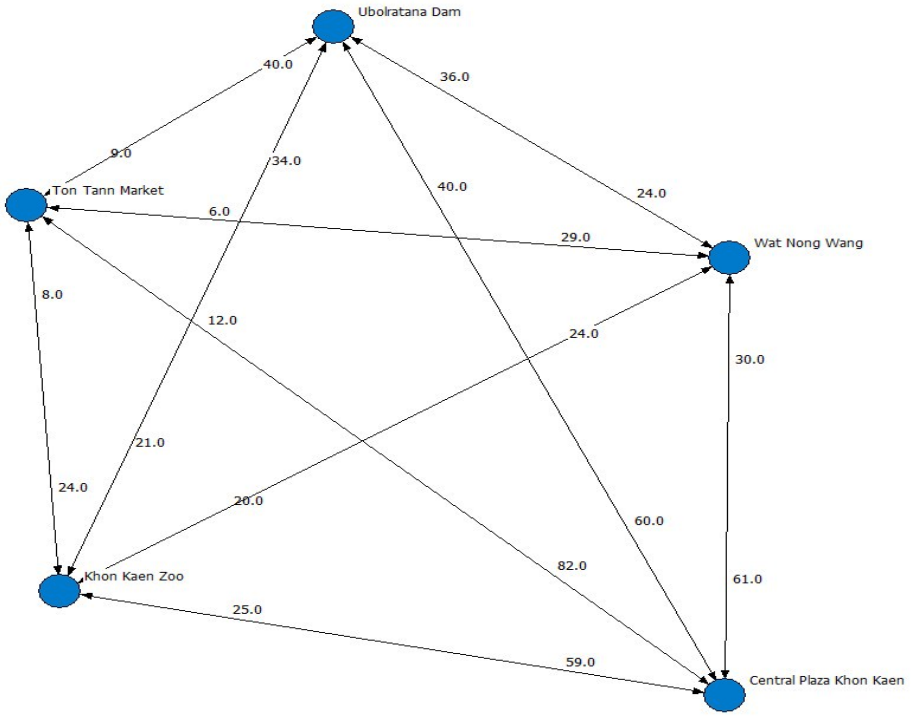

Figure 2 Travel Pattern Network of Khon Kaen Based on Degree Centrality Values
Source: Calculated by UCINET program

5. Discussion of Research Findings

The findings of this study provide valuable insights into tourist behavior and multi-attraction visits within Khon Kaen Province, a key tourism hub in Northeastern Thailand. As the province ranks second in the region in terms of visitor numbers and tourism income (Tourism Authority of Thailand, 2023) understanding how tourists navigate its attractions is crucial for strategic tourism planning and development. The study identified Central Plaza Khon Kaen as the primary tourism hub, serving as a focal point from which visitors traveled to other key attractions, including Ton Taan Market, Ubolratana Dam, Wat Nong Wang, and Khon Kaen Zoo.

This aligns with previous research indicating that commercial and urban centers often serve as anchor destinations, influencing tourist movement within a region (Chhetri et al., 2020) The application of Social Network Analysis (SNA) using UCINET provided a deeper understanding of these travel sequences, revealing the connectivity between various attractions and the extent to which certain sites act as pivotal nodes in the province's tourism network (Freeman, 2004) These findings have important implications for tourism management and policy. By recognizing the centrality of key attractions, policymakers and stakeholders can better design tourism routes, integrate attractions more effectively, and enhance visitor experiences through improved transportation systems and infrastructure (Hall, 2019) Strengthening road networks and optimizing traffic flow between major tourist sites can enhance accessibility and convenience, making Khon Kaen a more attractive destination for both domestic and international visitors (UNWTO, 2022). Furthermore, the insights gained from this study can contribute to more sustainable tourism development by promoting balanced visitation across attractions, reducing congestion at popular sites, and encouraging exploration of lesser-known destinations (Weaver, 2021) By strategically linking attractions and developing well-defined tourism circuits, Khon Kaen can further enhance its reputation as a dynamic and interconnected tourism destination, maximizing its economic potential while ensuring a positive visitor experience.

6. Knowledge from Research

This study contributes new insights into tourist behavior and multi-attraction visits within Khon Kaen Province, offering both theoretical and practical implications for tourism development.

1. Identification of a Tourism Hub The study confirms that Central Plaza Khon Kaen functions as the primary tourism hub, influencing tourist movement across the province. This highlights the role of commercial centers in shaping travel patterns, which can be applied to other urban destinations.

2. Tourism Flow and Connectivity Using Social Network Analysis (SNA), the research provides a novel perspective on how attractions are interconnected. The findings demonstrate that tourists follow specific travel sequences, with strong linkages between Central Plaza, Ton Taan Market, Ubolratana Dam, Wat Nong Wang, and Khon Kaen Zoo. This knowledge helps in optimizing travel routes and integrating attractions.

3. Policy and Infrastructure Development The study offers practical recommendations for tourism planning, emphasizing the need to improve transportation infrastructure and road connectivity between key attractions. This supports sustainable tourism growth by enhancing accessibility and visitor experience.

4. Balanced Tourism Distribution The research suggests strategies to distribute tourist flow more evenly across attractions, reducing congestion at popular sites and promoting lesser-known destinations. This contributes to long-term sustainable tourism management.

5. Application of SNA in Tourism Studies By utilizing UCINET for network analysis, this study demonstrates the effectiveness of Social Network Analysis in understanding tourist behavior. This methodological approach can be adapted for future tourism research in other destinations.

Overall, this study advances knowledge on destination management and provides valuable data for policymakers, tourism operators, and urban planners to enhance Khon Kaen's tourism potential.

7. Recommendation

Policy recommendations

The results of the Descriptive Statistics study reveal the travel behavior of tourists visiting Khon Kaen Province. Most tourists travel for relaxation or to visit friends or relatives, typically arriving from other provinces by private car, traveling in pairs, staying for 1–2 days, and spending over 5,000 baht during their trip. Analysis of travel patterns to and from five main tourist attractions shows that Central Plaza Khon Kaen is the most visited origin point (46.86%), followed by Ubolratana Dam (19.81%), Wat Nong Wang (15.46%), Khon Kaen Zoo (12.08%), and Ton Taan Market (5.78%). The most common next destinations from these locations vary, with Central Plaza Khon Kaen most frequently leading to Ton Taan Market (48.68%) and Wat Nong Wang (16.40%), while Khon Kaen Zoo primarily connects to Central Plaza Khon Kaen (31.40%) and Ubolratana Dam (26.45%). Ton Taan Market directs most tourists to Khon Kaen Zoo (27.27%) and Wat Nong Wang (25%), and Ubolratana Dam commonly leads to Khon Kaen Zoo (24.81%), Ton Taan Market (21.80%), and Wat Nong Wang (21.05%). Wat Nong Wang primarily connects to Central Plaza Khon Kaen (33.94%) and Ubolratana Dam (28.44%).

The results of the Social Network Analysis show that Central Khon Kaen holds the highest Degree Centrality value (262), followed by Ton Taan Market (175), Ubolratana Dam (170), Wat Nong Wang (150), and Khon Kaen Zoo (141), highlighting their significance as tourist hubs. These findings provide essential insights for developing tourism policies, such as linking attractions, enhancing transportation systems, and maintaining infrastructure to support connectivity and improve the tourist experience.

For the policy recommendations: 1) A policy should be proposed to increase the number of public shuttle service points in the province. According to the data collected, only 4.3% of tourists use the public shuttle service provided by the province, while the use of taxis,

motorcycles for hire, and rental cars is more than double this figure. Additionally, some respondents mentioned in the questionnaire that they were unaware of the availability of public shuttle services in Khon Kaen. 2) Renovations or promotional activities should be undertaken to attract more visitors to Wat Nong Wang and Khon Kaen Zoo, as their Degree Centrality values are relatively low compared to Central Plaza Khon Kaen, Ton Taan Market, and Ubolratana Dam.

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Technical Efficiency and Determinants of Khao Gor Kor – Maejo 2 Rice Production: Insights from Stochastic Frontier Modeling

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Abstract

This study investigates the technical efficiency of Khao Gor Kor – Maejo 2 rice production in Chiang Rai province, Thailand, using the Stochastic Frontier Approach (SFA) to identify key factors influencing efficiency. Despite the introduction of improved rice varieties like Khao Gor Kor – Maejo 2, many smallholder farmers struggle to achieve optimal productivity, hindered by inefficiencies in input utilization and resource management. Primary data were collected from 400 rice farmers through structured interviews, and the SFA model was applied to estimate technical efficiency scores and determine the sources of inefficiency. The study concludes that optimizing capital and labor inputs and addressing inefficiencies through targeted interventions could substantially improve the technical efficiency of Khao Gor Kor – Maejo 2 rice production. These insights are critical for developing policies and strategies that enhance agricultural productivity and sustainability, ultimately benefiting smallholder farmers and contributing to food security in Thailand. Future research is recommended to explore additional variables and extend the analysis to other rice varieties and regions.

Keywords: Khoa Gor Kor-Maejo2; Stochastic Frontier; Technical Efficiency

1. Introduction

Rice, particularly Khao Gor Kor-Maejo2 (KGK-MJ2), is a staple food and a significant economic crop in Thailand. Its cultivation is crucial for ensuring food security, generating rural incomes, and supporting the national economy. However, despite its importance, the

production efficiency of KGK-MJ2 has been a subject of growing concern due to factors such as resource constraints, climate change, and changing market dynamics. Enhancing the technical efficiency of KGK-MJ2 production is therefore imperative for the sustainability of the rice sector. The specific problem addressed in this study is the need to identify and quantify the factors that influence the technical efficiency of Khao Gor Kor – Maejo 2 rice production. Understanding these factors is crucial for developing strategies to enhance productivity and ensure the sustainable use of resources. While previous studies have examined technical efficiency in rice production, there is limited research focused on this specific rice variety, especially in the context of smallholder farming systems in Thailand.

This study addresses these research gaps by focusing specifically on the technical efficiency of Khao Gor Kor – Maejo 2 rice production, using the Stochastic Frontier Approach to identify and analyze the key factors influencing efficiency. By concentrating on smallholder farmers and providing policy-oriented insights, the research aims to contribute valuable knowledge that can inform strategies for enhancing rice production efficiency in Thailand. Technical efficiency, defined as the maximum output attainable from a given set of inputs, is a crucial metric for evaluating the performance of agricultural systems. Several studies have explored the technical efficiency of rice production across various regions of Thailand, highlighting key factors that influence productivity. For example, Wiboonpongse, Sriboonchitta, and Chaovanapoonphol (2006) analyzed the technical efficiency of rice farmers in Northern Thailand using a stochastic frontier approach, revealing significant inefficiencies due to suboptimal use of inputs and traditional farming practices. Their study suggests that efficiency could be improved through better resource management and adoption of modern techniques. Coelli and Fleming (2004) conducted a study on rice farmers in Southern Thailand, finding that differences in technical efficiency were closely related to access to irrigation and capital. They emphasized the importance of infrastructure development in enhancing agricultural productivity. Kumar and Singh (2008) studied rice production efficiency in the Central Plains and found that farm size, education level of the farmer, and access to extension services significantly impacted efficiency levels. Coelli et al. (2005) examined the efficiency of rice farmers in Bangladesh, finding significant variations in efficiency levels due to differences in input use, access to technology, and farming practices. Autchariyapanitkul et al. (2017) applied a Stochastic Frontier Model (SFM) using a Generalized Maximum Entropy (GME) approach, which offers a more accurate estimation of inefficiency compared to conventional methods. Their analysis revealed that 95% of the sampled sticky rice farmers exhibit high inefficiencies, with most efficiency scores falling between 0.6 and 0.8. Collectively, these studies demonstrate the need for region-specific strategies to improve the technical efficiency of rice production across Thailand. While these studies provide valuable insights, there is still a need for further research to understand the specific challenges and opportunities in KGK-MJ2 production.

This study aims to contribute to this body of knowledge by analyzing the technical efficiency of KGK-MJ2 production in Chiang Rai. The research will focus on identifying factors affecting efficiency. By employing Stochastic Frontier Analysis (SFA), this study seeks to provide empirical evidence on the factors influencing technical efficiency and to offer recommendations for improving the productivity of KGK-MJ2 farmers. The findings of this research are expected to inform policymakers, extension services, and farmers about the potential areas for enhancing KGK-MJ2 production. By identifying the key determinants of technical efficiency, this study can contribute to the development of targeted interventions to improve resource utilization, reduce production costs, and increase farm incomes. Ultimately, this research aims to support the sustainable development of the KGK-MJ2 sector in Thailand.

2. Research Objectives

The objective of this study is to evaluate the technical efficiency of Khao Gor Kor-Maejo 2 rice production specifically in Chiang Rai province.

3. Research Methodology

3.1 Data Collection

Data were collected through structured interviews using a questionnaire. The questionnaire was designed to gather information on various aspects of rice production, including demographic details, input usage (seeds, fertilizers, labor), and output (rice yield). The questionnaire was pre-tested on a small group of farmers to ensure clarity and relevance, and necessary adjustments were made based on feedback. Due to the exact population number is unknown. Therefore, the sample size can be calculated from W.G.Cochran's unknown sample size formula given a 95 percent level of significant. Using this formula, the calculated sample size is approximately 384 farmers. To account for potential non-responses or incomplete data, the sample size was increased to 400 farmers.

3.2 Variables

The key variables examined in this study include: Dependent Variable such as Rice Yield (kg): The output of rice production per farmer. Independent Variables including Seed Usage (kg): The number of seed used per plot. Labor Cost (THB): The total cost of labor used in rice production. Fertilizer Cost (THB): The total cost of fertilizers used. Pesticide Cost (THB): The total cost of pesticides used. Irrigation Zone: Categorical variable indicating whether the farm is within or outside an irrigation zone. Soil Characteristics: Categorical variable indicating the type of soil (sandy loam, clay, clay loam).

3.3 Stochastic Production Frontier (SPF) Approach

The Stochastic Production Frontier approach was first introduced by Aigner, Lovell, and Schmidt (1977) and Meeusen and Van den Broeck (1977) This method allows for the separation of random noise from inefficiency effects in production, making it particularly suitable for analyzing agricultural data, where unpredictable factors such as weather can influence output. The SPF model has since been widely adopted in agricultural economics to assess the efficiency of various crops and farming systems. Battese and Coelli (1995) further developed the SPF model by introducing a method to estimate inefficiency effects in a panel data setting, which allowed for a more nuanced understanding of the factors influencing technical efficiency over time. Their work has laid the foundation for numerous studies on agricultural efficiency, particularly in developing countries where variability in farming practices and environmental conditions is significant.

Stochastic Frontier Analysis (SFA) is a statistical method used to estimate the production frontier and measure technical inefficiency in economic production processes. Unlike deterministic frontier models, SFA incorporates a random error term to account for statistical noise and a non-negative inefficiency term to capture the extent to which firms or individuals operate below their maximum potential. The basic SFA model can be expressed as follows:

$$y = f(x) + v + u$$

where:

y is the observed output

$f(x)$ is the production frontier function, representing the maximum possible output given the input vector x

v is a symmetric random error term, representing statistical noise

u is a non-negative inefficiency term, capturing the deviation from the production frontier

The production frontier function f(x) is typically specified as a Cobb-Douglas or translog functional form. The inefficiency term u is often assumed to follow a half-normal or truncated normal distribution.

4. Research Findings Summary

This study on the technical efficiency of Khao Kao Maejo 2 rice production aimed to achieve two primary objectives: 1) to analyze the technical efficiency of Khao Kao Maejo 2 seed production, and 2) to examine the relationship between production factors and the yield of Khao Kao Maejo 2 rice. Primary data were collected from a sample of 400 farmers in Chiang Rai province in 2020. The research findings are as the following

4.1 General Information of Farmers

General Information	Number (persons)	Percentage (%)
Gender		
Male	303	75.75
Female	97	24.25
Total	400	100.0
Age (years)		
Equal or below 30	3	0.75
31 – 37	9	2.75
38 – 44	27	6.75
45 – 51	64	16.00
Equal or above 52	297	74.25
Total	400	100.00
Education		
Primary school	297	74.25
Junior High School	30	7.5
Senior High School	48	12.00
Vocational School	16	4.00
Undergraduate	9	2.25
Total	400	100.00
Irrigation Zone		
Outside the irrigation zone	84	21.0
Inside the irrigation zone	316	79.0
Total	400	100.00
Cultivated Area		
Lowland	51	12.75
Upland	349	87.25
Total	400	100.00
Soil Characteristics		
Sandy Loam Soil	124	33.5
Clay Soil	120	30.0
Clay Loam Soil	146	36.5
Total	400	100.00

Table 1 General Information of Farmers

An analysis of the general characteristics of the farmers revealed that the majority were male, accounting for 75.75% of the respondents (303 individuals), while females made up the remaining 24.25% (97 individuals). Most rice farmers were 52 years old or older, with 74.25% of the farmers (297 individuals) falling into this age group. The majority of farmers had completed only primary education (74.25%).

Regarding the cultivation area, most of the land used to grow Khao Kao Maejo 2 rice was upland, accounting for 87.25% of the total area, with the remaining 12.75% being lowland. Furthermore, a significant proportion of the cultivated land (79%) was under irrigation, while 21% was non-irrigated. Soil types were fairly evenly distributed among the farmers: 36.5% of the land was clay loam, 33.5% was sandy loam, and 30% was clay.

4.2 Summary Statistics of Rice Cultivation

Table 2 presents the summary statistics for various inputs and outputs related to rice cultivation based on a sample of 400 observations. The variables include the quantity of seeds used, the costs associated with pesticides, fertilizers, and labor, and the yield of rice production.

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Seed (kilograms)	400	295.01	130.91	84	1,840
Pesticide Cost (THB)	400	318.35	83.56	44	445
Fertilizer Cost (THB)	400	355.01	565.39	0	7,420
Labor Cost (THB)	400	1,653.53	813.41	600	11,969
Yield (kilograms)	400	616.36	164.59	20	1,000

Table 2 Summary Statistics of General Information on Rice Cultivation

This summary provides a concise overview of the variability and central tendencies in the data, which is critical for understanding the distribution of inputs and outputs in rice cultivation.

4.3 Analysis of Production Efficiency Using Stochastic Production Frontier

The analysis of production efficiency was conducted using the Stochastic Production Frontier technique, with parameter estimation carried out using the Maximum Likelihood method. The objective was to assess the technical efficiency of producing the rice variety "Khao Kao Maejo 2" by applying a Cobb-Douglas production function to identify the factors influencing production efficiency. The Cobb-Douglas (CD) Production Function (Cobb, C. W., & Douglas, P. H. ,1928) is a widely used functional form in economics to represent the relationship between inputs (typically capital and labor) and the output of a firm or economy. Table 3 presents the results of the estimation, showing the coefficients, standard errors, t-statistics, and p-values for each variable.

Variable	Coefficient	Std. Err.	t-stat	p-value
Capital	-0.0213***	6.35e-06	-0.0003	0.000
Labor Cost	0.0175***	5.66e-06	-3,106.91	0.000
Constant	7.960	0.0000134	590,000	0.000
σ_v	1.13e-08	1.16e-06		
σ_u	0.811	0.02667		
λ	7.18e+07	0.02867		

Notes: significant at 0.05 level of significant.

Table 3 Factors Influencing Production According to Cobb-Douglas Theory

The results from the Cobb-Douglas production function analysis reveal that labor cost has a positive and statistically significant impact on production, while capital unexpectedly shows a negative effect. The coefficient for labor cost (0.0175) suggests that higher labor expenses contribute to increased production, possibly indicating that labor investment enhances productivity. Conversely, the negative coefficient for capital (-0.0213) is counterintuitive, as capital is generally expected to boost production. This result may stem from model mis-specification, diminishing returns, omitted variables, or data-related issues. The variance parameters further indicate that inefficiencies play a significant role in production, with λ (7.18e+07) suggesting that inefficiencies dominate over random fluctuations. The findings imply that firms should focus on improving labor productivity while reassessing capital investments to avoid inefficiencies. Given the unexpected negative impact of capital, further analysis is recommended, including testing for multicollinearity, exploring alternative production function specifications, and reassessing capital measurement to ensure robust conclusions.

4.4 Technical Efficiency Distribution

Technical Efficiency (TE: %)	Number of Farmers	Percentage (%)
0-20	11	2.75%
21-40	2	0.5%
41-60	191	47.75%
61-80	139	34.75%
81-100	57	14.25%
Total	**400**	**100%**

Table 4 Technical Efficiency of Farmers in Rice Production for the Khao Khao-Maejo 2 Variety

This table illustrates the distribution of technical efficiency among farmers in the production of the Khao Khao-Maejo 2 rice variety.

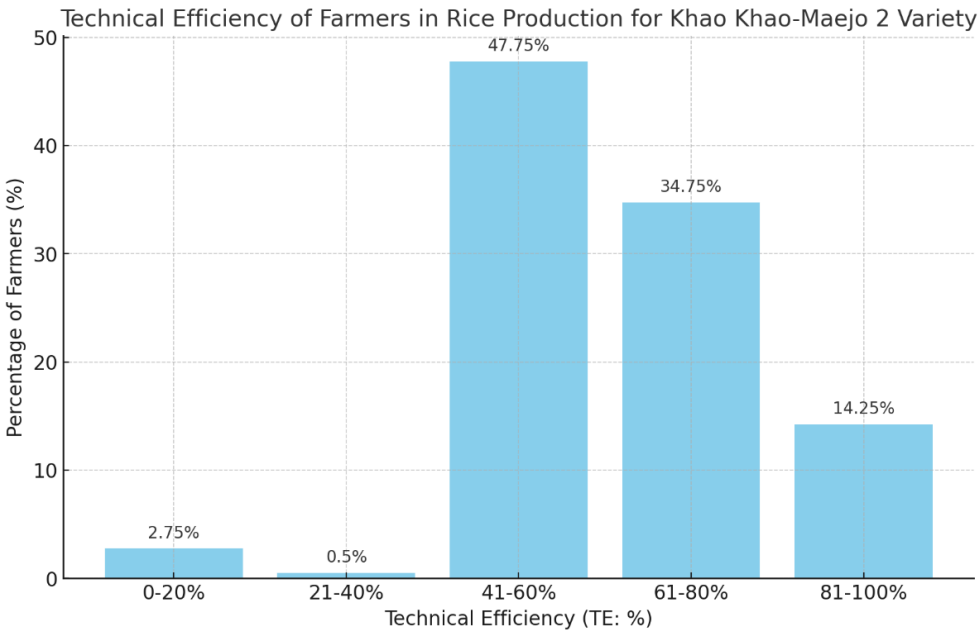

Figure 1 Technical Efficiency of Farmers in Rice Production for Khoa Khao-Maejo 2 Variety

The accompanying graph displays the distribution of farmers' technical efficiency in producing the Khao Khao-Maejo 2 rice variety. The technical efficiency (TE) is categorized into five ranges: 0-20%, 21-40%, 41-60%, 61-80%, and 81-100%. The y-axis represents the percentage of farmers within each efficiency range.

The analysis of technical efficiency (TE) among farmers reveals that the majority, approximately 47.75%, operate within the 41-60% efficiency range, indicating moderate efficiency levels in rice production. This suggests that nearly half of the farmers have room for improvement in optimizing their resources. The second-largest group, comprising about 34.75% of farmers, falls within the 61-80% efficiency range, demonstrating relatively high efficiency but still leaving potential for further enhancement. A smaller but notable proportion, around 14.25%, achieves high technical efficiency in the 81-100% range, indicating that these farmers are utilizing their resources effectively and maximizing their production potential. On the lower end of the efficiency spectrum, only a small percentage of farmers fall into the 0-20% (2.75%) and 21-40% (0.5%) categories. These farmers may be facing significant challenges in optimizing their production processes, resulting in lower outputs relative to their inputs. Overall, while a substantial number of farmers exhibit moderate to high efficiency, targeted interventions could help those in the lower efficiency ranges improve their productivity and resource utilization.

The graph indicates that while most farmers are achieving moderate to high levels of technical efficiency, a notable proportion is operating at less than optimal efficiency. This suggests potential areas for improvement, such as adopting better farming practices, optimizing input usage, or investing in more effective technologies. By addressing these inefficiencies, the overall productivity and profitability of rice production could be enhanced.

5. Discussion of Research Findings

5.1 Optimization of Input Usage

Capital Usage: The findings indicate that increased capital usage slightly decreases production efficiency, suggesting potential overuse of inputs such as seeds, fertilizers, or pesticides. This aligns with previous studies (Coelli et al., 2005) that highlight the risks of diminishing returns when inputs are misallocated. Improving seed management through precise seeding rates and higher seed quality can reduce wastage and enhance productivity (Pingali, 2012). Adopting precision agriculture techniques may also optimize capital input utilization and maximize output efficiency. Labor Costs: The positive relationship between labor costs and efficiency suggests that skilled labor plays a crucial role in rice production. This supports the argument by Schultz (1964) that human capital investment significantly improves agricultural productivity. Providing farmers with training on best farming practices and ensuring adequate compensation for labor can further boost efficiency. Additionally, labor-intensive methods may be beneficial, particularly in smallholder farming systems, as they improve crop management and quality control (Barrett et al., 2010).

5.2 Addressing Inefficiencies

The high lambda value in the study underscores the significance of inefficiencies in rice production. Inefficiencies may stem from suboptimal farming practices, lack of access to modern agricultural technologies, or inadequate information dissemination (Farrell, 1957). Reducing these inefficiencies requires a multi-faceted approach, including:

Adoption of modern farming techniques such as mechanization and precision irrigation (Gollin et al., 2014).

Improved access to agricultural extension services to enhance knowledge sharing (Anderson & Feder, 2007).

Development of infrastructure that facilitates better transportation and market access for farmers (Dorward et al., 2004).

Policymakers should focus on identifying inefficiencies at regional and demographic levels to tailor interventions accordingly. For instance, supporting water management initiatives or improving rural credit access could mitigate inefficiencies and enhance overall productivity.

5.3 Resource Allocation

The study suggests that reallocating resources to inputs with the highest impact—such as labor—can improve production efficiency. This aligns with findings by Hayami and Ruttan (1985), who argue that resource allocation plays a crucial role in driving agricultural transformation. Potential strategies include:

Subsidies or incentives for labor-intensive but high-efficiency practices such as organic farming or integrated pest management (Pretty et al., 2011).

Providing farmers with data-driven insights on input productivity to inform better resource allocation (Fuglie & Rada, 2013).

Understanding which inputs contribute most to efficiency can enable farmers to make more informed decisions about investment priorities, ensuring better financial and production outcomes.

5.4 Policy Implications

The study provides empirical evidence that can inform policy frameworks aimed at improving rice production efficiency. Key policy recommendations include:

Encouraging optimal seed usage through guidelines and support programs (Byerlee et al., 2009).

Improving labor conditions through education and vocational training programs (FAO, 2017).

Reducing inefficiencies by investing in agricultural infrastructure, such as irrigation systems and storage facilities (Pingali & Rosegrant, 2001).

Furthermore, technology adoption policies should focus on bridging the digital divide in rural farming communities, ensuring that smallholder farmers can leverage modern agricultural innovations to enhance productivity.

5.5 Economic Sustainability

Enhancing production efficiency not only reduces costs but also increases yields, leading to improved economic outcomes, particularly for smallholder farmers. This aligns with the Sustainable Development Goals (SDGs) set by the United Nations (UN, 2015), which emphasize the importance of sustainable agricultural practices for food security and poverty reduction. Key benefits of improved production efficiency include:

Higher profitability for farmers, enabling reinvestment in better inputs and technologies (Dercon & Christiaensen, 2011).

Reduced environmental impact through efficient resource use, supporting long-term agricultural sustainability (Tilman et al., 2002).

By integrating efficiency-enhancing strategies into agricultural policies, stakeholders can promote both economic resilience and sustainable food production systems, ensuring long-term benefits for farming communities and the broader economy.

6. Knowledge from Research

This study contributes to the understanding of agricultural efficiency by highlighting the critical role of input optimization and resource allocation in rice production. The findings emphasize that effective seed management, skilled labor, and access to modern technologies are key drivers of productivity. These insights align with previous research while providing specific recommendations for improving efficiency in local farming contexts. Furthermore, the study underscores the importance of addressing inefficiencies through targeted policy interventions. By identifying factors that hinder production efficiency, such as suboptimal resource use and limited infrastructure, policymakers and agricultural stakeholders can design more effective strategies to support farmers. This contributes to the broader discourse on sustainable agriculture and rural development. Finally, the research provides valuable implications for economic sustainability in agriculture. By improving production efficiency, farmers can achieve higher yields and profitability while minimizing resource waste. These findings support the transition towards more resilient agricultural systems that balance productivity with environmental sustainability, ensuring long-term food security and economic stability.

7. Recommendation

Based on the findings, the following recommendations are proposed to enhance rice production efficiency:

1. Improved Seed and Input Management: Farmers should adopt better seed selection and precise seeding techniques to avoid overuse and improve productivity. Government programs could support farmers by providing access to high-quality seeds and training on optimal input application.

2. Skill Development for Farmers: Agricultural extension services should focus on training programs to enhance farmers' skills in modern farming techniques, resource management, and sustainable practices. This could be facilitated through workshops and technology-driven learning platforms.

3. Enhancing Access to Agricultural Technology: Policymakers should promote the adoption of precision agriculture tools, such as GPS-guided equipment and automated irrigation systems, to optimize input usage and improve efficiency.

4. Incentives for Sustainable Practices: Governments should offer financial incentives or subsidies for practices that promote long-term sustainability, such as organic farming and integrated pest management.

5. Strengthening Market Access and Infrastructure: Investing in rural infrastructure, such as roads, storage facilities, and transportation networks, can reduce post-

harvest losses and ensure that farmers have better access to markets, thereby improving profitability.

6. Policy Support for Labor-Intensive Farming Methods: Given the positive impact of labor on efficiency, policies should support fair wages and better working conditions for farm laborers. Encouraging cooperative farming models may also enhance productivity and reduce labor shortages.

By implementing these recommendations, stakeholders—including farmers, policymakers, and agricultural organizations—can work towards a more efficient and sustainable agricultural system, ensuring long-term benefits for both food security and economic stability.

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Interfans' travel patterns and routes during concert trips in Thailand

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Abstract

Entertainment tourism in Thailand has rapidly grown, becoming a major source of income due to the country's strategic location as a convenient stop in Southeast Asia for regional music tours. This study investigates the travel routes and behaviors of international music fan clubs (Interfans) attending concerts in Thailand. A survey of 312 respondents, primarily females aged 26–40, was analyzed using descriptive statistics and chi-square tests. Results showed that most respondents continued traveling after the concert, mainly within Bangkok, followed by Chonburi. Social media, recommendations, and reviews were key factors influencing destination choices. The study highlights the economic impact of music tourism, with concertgoers contributing to local businesses through spending on accommodation, food, and shopping. These findings provide valuable insights for policymakers and tourism operators to enhance services and strategies, encouraging tourists to revisit. Future research should expand the sample to include more nationalities and explore the role of traditional music events in attracting tourists.

Keywords: Interfans' travel patterns; tourism routes; concert trips in Thailand

1. Introduction

Entertainment tourism refers to travel and tourism activities primarily motivated by the desire to experience entertainment-related events, attractions, or activities at a destination. It holds significant importance as people increasingly seek unique and memorable

experiences designed to meet their needs during travel (Luo and Fan, 2022). Entertainment tourism encompasses five categories: music, film, gaming, theme parks, and cultural events. Music tourism, in particular, is a vibrant form of travel where fans journey to experience live performances, festivals, and historic music landmarks. When individuals purchase tickets to attend an event or performance, especially one that requires travel, they often spend additional money within the local economy (Miller, 2024).

In 2023, the number of music events in Thailand increased by 111% (Tingmonthly, 2023), and international tourist numbers, especially from East Asian countries, according to Economics Tourism and Sport Division rise by 350.06% compared to 2022. This growth is attributed to Thailand's location in Southeast Asia, making it a convenient stop for artists on regional tours, leading to more music event organizations in the country. Moreover, the government is aware of the growth in the music event market and supports it through policies that incentivize the development of the entertainment industry. This results in an increase in the purchasing power of consumers, attracting both domestic and international tourists interested in music events to enter the country. In other words, concerts rise with an increase in foreign tourists (Borowiecki and Castiglione, 2014). Event tourism is reshaping the travel industry post-COVID, with an increasing number of people willing to fly to attend concerts. This trend is linked to hedonism, which is defined as the pursuit of pleasure and enjoyable experiences, driven by the desire to satisfy pleasurable needs. Hedonism is often associated with emotional desires, as people generally seek a pleasurable and fulfilling life. Consequently, hedonism can be seen as having a positive impact on individual entertainment and experiences (Luo et al., 2021). When planning a travel trip, it is essential to specify the place you want to visit, determining a destination based on five factors: catering, accommodation, landscape, culture, and recreation and entertainment (Wang et al., 2021). To receive the best experience, satisfaction, and memories, tourists not only attend concerts but also plan to visit other destinations, incurring expenditures such as accommodation, transportation, entertainment, dining, and other related services. International tourist expenditures have a positive impact on economic growth (Rehman et al., 2020). After a successful trip, tourists have the best experience and good memories, bringing the potential for a revisit incentive as a tourist position, not only for tourists but also attracting artists for private trips and the possibility of returning to organize their concerts in the country again.

As mentioned above, the purpose of this study is to explore international fans' experiences during concert trips, including their travel routes and behaviors, and their impact on Thailand's tourism sector. The results of the study are beneficial for policymakers and tourism operators in planning tourism supplies to meet the demand of international music fan clubs, enhance a destination's image, and attract international tourists.

2. Research Objectives

2.1 To study the travel routes of international music fan clubs.

2.2 To study the tourism behavior of international music fan clubs.

3. Research Methodology

3.1 Population and Sample Size

The population of this study consists of international music fans from Southeast Asia and East Asia who have attended concerts in Thailand. The sample size of this study includes 207 respondents, determined using the G*Power program, which calculates the sample size without requiring the exact population size (Cohen, 1977)

3.2 Data Collection Tools

To collect data for the study, the researcher developed an online survey and distributed the online survey by post in social media with hashtag about artist and event in Thailand, and directly provided it to Music international fans club.

Part 1: The demographic of participants consists of gender, age, nation, income per month, reason for visiting to Thailand.

Part 2: Travel Route, this section uses closed-ended questions with predefined answer options. The questionnaire allows participants to select one or more destinations from a given list after attending the concert. The survey also explores the factors and motivations influencing their destination choices, as well as their satisfaction with the selected destinations. Participants are asked to rate their satisfaction on a scale of 1 to 5, where level 5 indicates very high satisfaction, level 4 indicates high satisfaction, level 3 indicates moderate satisfaction, level 2 indicates low satisfaction, and level 1 indicates very low satisfaction.

Part 3: Tourism Behavior, this section uses closed-ended questions with predefined answer options, allowing participants to select one or more answers. The questionnaire covers topics such as time spent, accommodation, expenditure, travel arrangements in Thailand, intention to revisit Thailand, and sources for finding news or information about traveling. Additionally, participants are asked to rank their top three types of expenditures.

3.4 Data Analysis

Descriptive Statistics

Descriptive statistics, such as frequency, percentage, and mean, were used to analyze data collected from a sample group. This method was applied to closed-ended and ranking questions to determine the average characteristics of concertgoers based on demographics. Additionally, it was used to describe their travel routes and behaviors.

Chi-Square Test

The Chi-square test is used to analyze the relationship between independent variables, including opinion scores on factors and motivations influencing destination choice, and satisfaction with the selected destination. The goal was to identify the variables that are most crucial in explaining dependent variables is revisit intention. The analysis of relationships was divided into two groups: 1) the sample group who continued traveling after the concert, and 2) the sample group who only attended the concert, as shown in Table 9 and Table 10.

4. Research Findings Summary

Based on the questionnaires answered by 312 music international fans located in Southeast Asia and East Asia that had attend concert in Thailand, we have summarized the descriptive statistics of the variables used in our study. The majority of respondents were female (87.9%) and aged between 26 and 40 years (52.4%). Most respondents were Chinese (41%) and had a monthly income level between 25,001 and 35,000 baht. Additionally, a greater proportion of respondents continued traveling after the concert (59.6%) compared to those who only attended the concert (40.4%), as shown in Table 1

Factor	Category	Frequency	Proportion
Gender	Male	32	10.2%
	Female	277	87.9%
	Rather not to say	6	1.9%
Age	Under 18 years	10	32.0%
	18 – 25 years	125	39.7%
	26 – 40 years	165	52.4%
	41 – 60 years	13	4.1%
	Over 60 years	2	0.6%
Nation	Cambodia	2	0.6%
	China	129	41.0%
	Indonesia	33	10.5%
	Japan	19	6.0%
	Laos	1	0.3%
	Malaysia	15	4.8%
	Myanmar	5	1.6%
	Philippines	24	7.6%

Factor	Category	Frequency	Proportion
	Russia	2	0.6%
	Singapore	20	6.3%
	South Korea	22	7.0%
	Taiwan	11	3.5%
	Vietnam	26	8.3%
	Others	6	1.9%
Income per month	Under 5,000 baht	2	0.6%
	5,001 – 15,000 baht	15	4.8%
	15,001 – 25,000 baht	97	30.8%
	25,001 – 35,000 baht	115	36.5%
	35,001 – 45,000 baht	50	15.9%
	Over 45,000 baht	36	11.4%
Reason for visiting on this trip	Attend only concert	126	40.4%
	Carry on traveling after the concert	186	59.6%

Table 1 Demographic Profiles of the Respondents

The result of respondents travel route about type of destination, they mostly go to the place that involve concert theme (20.9%) and live in Bangkok (63.4%). But if it's in the provinces, most people will choose to go Chonburi (14.4%), as shown in Table 2.

Regarding the respondents' opinions on the factors and motivations influencing their destination choice and their satisfaction with the selected destination. In our results, we will separate the respondents into two groups.

The first group consists of those who continued traveling after the concert. They provided average scores for the factors and motivations influencing their destination choice, with the most common being self-interest (Mean = 4.34), social media (Mean = 4.33), and recommendations and reviews (Mean = 4.13), respectively. Their satisfaction was mostly influenced by Thai people (Mean = 4.35), food and beverages (Mean = 4.29), and the destination environment (Mean = 4.15), respectively. As shown in Table 3

The second group consists of those who only attended the concert. They provided average scores for the factors and motivations influencing their destination choice, with the most common being self-interest (Mean = 4.41), social media (Mean = 4.37), and recommendations and reviews (Mean = 4.15), respectively. Their satisfaction was mostly influenced by Food and beverages (Mean = 4.40), Thai people (Mean = 4.39), and the destination environment (Mean = 4.23), respectively.as shown in Table 4

	Category	Proportion
Type of destination	historical/cultural attraction	15.7%
	natural attraction	13.2%
	beach attraction	11.1%
	entertainment attraction	20.2%
	walking street	17.8%
	Place that involves concert theme	20.9%
	Café	1.0%
Provinces	Bangkok	63.4%
	Chonburi (Pattaya)	14.4%
	Phuket	3.2%
	Surat Thani (Koh Samui)	1.8%
	Chiang Mai	5.3%
	Songkhla (Hat Yai)	0.6%
	Phangnga	0.8%
	Krabi	0.8%
	Ayutthaya	8.7%
	Khao Yai	0.8%
	Khonkaen	0.2%

Table 2 Travel Route of the Respondents

	Category	Mean
Factors and motivations that influence destination choice	Self – interest	4.34
	Destination reputation	3.87
	Location	3.65
	Culture	3.55
	Recreation and entertainment	3.93
	Accommodation	4.02
	Recommendation and review	4.13
	Social media	4.33
Satisfaction with the selected destination.	Destination environment	4.15
	Weather	3.34
	Accommodation	3.90
	Transportation	3.85
	Sanitation	3.77
	Culture	3.84
	Food/Beverage	4.29
	Destination facilities	4.11

	Category	Mean
	Thai people	4.35
Factors and motivations that influence destination choice	Self – interest	4.41
	Destination reputation	3.80
	Location	3.55
	Culture	3.40
	Recreation and entertainment	3.92
	Accommodation	3.94
	Recommendation and review	4.15
	Social media	4.37
Satisfaction with the selected destination.	Destination environment	4.23
	Weather	3.24
	Accommodation	4.10
	Transportation	3.94
	Sanitation	3.79
	Culture	3.87
	Food/Beverage	4.40
	Destination facilities	4.07
	Thai people	4.39

Table 4 The score levels from the group that attended only the concert

In terms of travel behavior, most respondents will spend 4-7 days (69.9% of those who continue traveling, 71.4% of those who only attend the concert) in Thailand, choosing to travel independently (71.5% of those who continue traveling, 84.1% of those who only attend the concert) with a friend or coworker (70.4% of those who continue traveling, 57.9% of those who only attend the concert), as shown in Table 5.

		Continue traveling		Only attend the concert	
Behavior	Category	Frequency	Proportion	Frequency	Proportion
Time spends	1 – 3 days	17	9.1%	32	25.4%
	4 – 7 days	130	69.9%	90	71.4%
	8 – 15 days	38	20.4%	4	3.2%
	over 15 days	1	0.5%	0	0.0%
Travel arrangement	Independent tour	133	71.5%	106	84.1%
	Group tour	34	18.3%	12	9.5%
	Package tour	4	2.2%	5	4.0%
	Family tour	15	8.1%	3	2.4%

		Continue traveling		Only attend the concert	
Behavior	**Category**	**Frequency**	**Proportion**	**Frequency**	**Proportion**
Companions	Travel alone	28	15.1%	44	34.9%
	Friend/Coworker	131	70.4%	73	57.9%
	Family	26	14.0%	8	6.3%
	Strangers and become friend	1	0.5%	1	0.8%

Table 5 Tourists behavior

According to travel behavior, most respondents from both groups spend between 20,001 - 30,000 baht per trip (52.1%), with the majority spending on accommodation (68.9%) (Typically, people choose hotels (61.4%), hostels (13.7%), and guesthouses (10.0%)), food and dining (66.3%), and shopping (62.5%), respectively. The survey results found that the main channels through which respondents received information about concerts and attractions were primarily social media (90.5%), websites (51.3%), and blogs or online reviews (26.3%), respectively, as shown in

Most respondents have a high probability of revisiting Thailand in the future. When analyzing their revisit intention in relation to their opinions using the Chi-Square test, we observed that the group who continued traveling after the concert showed more statistically significant factors than the group who only attended the concert. These factors include motivations that influence destination choice (location, recreation and entertainment, destination reputation, self-interest, and accommodation) and their satisfaction with the selected destination (accommodation, destination environment, food/beverage), as shown in Table 6

	Independent variables	**Pearson Chi-square**	**df.**	**Asymptotic Significance (p-value)**	
Factors and motivations that influence destination choice.	Self - interest	12.533	4	0.014	*
	Destination reputation	18.021	6	0.006	**
	Location	24.365	6	<0.001	***
	Culture	8.011	8	0.432	
	Recreation and entertainment	21.175	6	0.002	**
	Accommodation	10.022	4	0.04	*
	Recommendation and review	11.261	6	0.081	
	Social media	6.139	6	0.408	

	Independent variables	Pearson Chi-square	df.	Asymptotic Significance (p-value)	
Satisfaction with the selected destination.	Destination environment	15.309	6	0.018	*
	Weather	12.486	6	0.052	
	Accommodation	16.467	6	0.011	*
	Transportation	1.865	6	0.932	
	Sanitation	5.994	4	0.2	
	Culture	10.384	6	0.109	
	Food/Beverage	11.758	4	0.019	*
	Destination facilities	5.062	6	0.536	
	Thai people	2.765	4	0.598	

Note: *, **, and ***, indicate significance at the confidence level 95%, 99%, and 99.9%, respectively.

Table 6 Results of Chi-Square analysis of the group who continued traveling after the concert

In contrast, the group who only attended the concert showed significance in social media as a factor and motivation influencing destination choice, and in destination facilities for satisfaction with the selected destination, as shown in Table 7

	Independent variables	Pearson Chi-square	df	Asymptotic Significance (p-value)	
Factors and motivations that influence destination choice.	Self - interest	6.749	8	0.564	
	Destination reputation	8.947	6	0.177	
	Location	4.225	6	0.646	
	Culture	8.212	8	0.413	
	Recreation and entertainment	5.375	6	0.497	
	Accommodation	3.383	6	0.759	
	Recommendation and review	6.13	6	0.409	
	Social media	13.338	4	0.01	**
	Destination environment	4.207	6	0.649	
	Weather	10.029	8	0.263	
Satisfaction with the selected destination.	Accommodation	10.675	6	0.099	
	Transportation	4.278	6	0.639	
	Sanitation	4.009	6	0.675	

	Independent variables	Pearson Chi-square	df	Asymptotic Significance (p-value)	
	Culture	3.637	6	0.726	
	Food/Beverage	3.339	4	0.503	
	Destination facilities	11.245	4	0.024	*
	Thai people	6.911	4	0.141	

Note: *, and **, indicate significance at the confidence level 95%, and 99%, respectively.

Table 7 Chi-Square analysis of the group who only attended the concert

5. Discussion of Research Findings

Based on the results mentioned above, the two objectives of this study can be discussed as follows:

The first objective, to study the travel routes of international music fan clubs. The finding that most respondents continued their travels after attending the concert can have economic impacts, as Miller (2023) noted that when individual purchase tickets to attend an event or performance, particularly one that requires travel they tend to spend additional money within the local economy. This is particularly significant in the context of Thailand, where the Office of the Permanent Secretary, Ministry of Tourism and Sports (2023) reported that tourism plays a crucial role in stimulating the economy. Major events, such as the Taylor Swift concert in Singapore, are expected to generate substantial economic benefits. This highlights the potential of music tourism to drive national economic growth in Singapore, and similarly, music events in Thailand can act as catalysts for broader economic growth, especially when attracting international tourists.

When examining the travel routes, it was found that most respondents were primarily interested in choosing places related to a concert theme. This aligns with the research by Borowiecki and Castiglione (2014), which noted that foreign tourists are more inclined to visit museums and attend concerts. It also corresponds with the study by Stipanović and Zubović (2023), which highlights the significant role of entertainment tourism, particularly attending concerts and exhibitions, as a primary motivation for tourists in selecting their destinations. Additionally, most respondents chose to travel only within Bangkok, which serves as a central hub for entertainment and concerts. However, a subset of respondents opted to travel to other provinces, with the majority selecting Chonburi, reflecting the importance of tourism in provinces that offer entertainment or interesting activities. Chonburi's proximity to Bangkok makes it an attractive option.

Regarding the factors and motivations influencing respondents' destination choices, personal interest, social media, and recommendations from others were key factors.

These findings are consistent with the study by Luo and Fan (2022), which suggests that entertainment tourism is driven by intrinsic motivations such as curiosity, enjoyment, and the pursuit of novelty. The role of social media and recommendations aligns with the findings of Oh et al. (2015), who found that social media significantly influences inbound tourism.

Respondent satisfaction with their chosen destinations stemmed from interactions with the friendliness of Thai people, the food and beverages, and the overall environment. These factors positively impacted their experience and memory, which suggests they had a good experience, according to the study by Rehman et al. (2020). *The second objective*, to study the travel behavior of international music fan clubs. Most respondents stayed in Thailand for 4-7 days, traveled independently with friends or colleagues, and spent between 20,001 - 30,000 baht per trip, primarily on accommodation, food, and shopping. This aligns with the study by Rehman et al. (2020), which showed that international tourist expenditures positively impact economic growth.

Respondents primarily received information about concerts and tourist attractions through social media, websites, and blogs or online reviews. This supports the study by Oh et al. (2015), which found that social media plays a significant role in predicting inbound tourism in Korea. It also aligns with the study by Lee et al. (2014), which emphasized that travel packages must incorporate entertainment elements to attract international fans.

Based on their behavior and satisfaction, most respondents indicated a high likelihood of revisiting Thailand in the future. This aligns with the study by Luo et al. (2021), which found that travel experiences mediate the relationship between hedonism and the intention to revisit. When comparing the two groups, those who continued their travels after the concert showed statistically significant differences from those who only attended the concert, particularly in factors such as location, recreation and entertainment, destination reputation, self-interest, and accommodation. Additionally, satisfaction with the selected destination, including accommodation, the destination environment, and food and beverages, was also significant. This is consistent with studies by Wang et al. (2021), who highlighted that destination reputation is a key factor influencing tourists' destination choices. Additionally, satisfaction with accommodation and the destination environment also impacts the intention to revisit, as suggested by Luo et al. (2021), who emphasized that travel experiences play a crucial role in shaping the intention to return. Conversely, the group that only attended the concert found that social media significantly influenced their destination choice. This can be linked to the study by Oh et al. (2015), which found that social media is a key predictor in determining inbound tourism trends. Furthermore, the consideration of destination facilities within this group reflects the importance of facilities in enhancing tourist satisfaction.

6. Knowledge from Research

This study contributes new insights into the emerging field of music tourism by examining the travel patterns and behaviors of international concertgoers in Thailand. The findings reveal that music tourism is not merely an event-based activity but also a catalyst for extended travel and economic stimulation. A significant proportion of attendees, particularly Chinese tourists aged 26–40, continue their travels after the concert, leading to increased spending on local businesses such as accommodation, dining, and shopping. This underscores the potential of concert tourism as a driver of regional economic growth, especially in areas beyond major metropolitan centers. Furthermore, this study highlights the strategic role of destination branding through entertainment tourism. By identifying the preferences and movement patterns of music fans, policymakers and tourism stakeholders can design targeted strategies to position Thailand as a prime destination for international music events. The integration of music tourism into broader tourism policies could lead to the development of infrastructure and services that enhance both visitor experiences and economic returns.

Additionally, this research contributes to the understanding of fan mobility and experience-driven tourism. Unlike traditional tourists, concertgoers exhibit distinct travel behaviors shaped by emotional engagement with the artists and the event atmosphere. This suggests that music tourism should be analyzed not only from an economic perspective but also through a socio-cultural lens, considering the experiential motivations and community-building aspects of fan travel.Lastly, the study identifies an opportunity to diversify Thailand's music tourism sector by incorporating traditional Thai music genres, such as Molam, into the global entertainment landscape. This could foster cultural tourism and create new avenues for international tourist engagement, ensuring a more sustainable and inclusive music tourism industry.

7. Recommendation

Policy Development for Music Tourism Promotion Policymakers should recognize the growing market for music tourism and develop strategies to promote tourism in various regions of Thailand beyond major cities like Bangkok. Infrastructure and music-related activities should be enhanced in secondary cities to distribute economic benefits more equitably and strengthen the country's image as a music and entertainment tourism destination.

Enhancing Services to Accommodate International Music Fans Tourism operators should improve and tailor their services to better meet the needs of international music fans. This includes offering accommodations that align with the budget preferences of this demographic, promoting restaurants with specialized menu options, and developing travel

packages that connect concert venues with key tourist attractions. Strengthening these services can enhance visitor satisfaction and increase the likelihood of repeat visits.

Expanding Sample Diversity and Research Scope As this study primarily focused on Chinese tourists, its findings may have limited applicability to other international fan groups. Future research should broaden the sample to include a more diverse range of nationalities to provide a more comprehensive understanding of global music tourism trends. Additionally, future studies should explore a wider scope of music events, including traditional Thai music genres such as **Molam**, to promote cultural heritage and expand the music tourism market in Thailand.

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Study of decision of the tourists to stay in a green hotel: A case study of Chiang Mai

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Abstract

The strategies to manage tourism and a green hotel in Chiang Mai are more important. Because it help motivate tourism and help to develop mange to hotel. This research has aims to study the factors that effect of tourists to stay in a green hotel in Chiang Mai by using logistic regression and data using simple random sampling during September - December 2018. The study found that the factors affecting the decision to stay green hotel are gender, age, trip expenditure, the image of a hotel that friendly with environment and consideration of green tourism in the next time. So the strategy to manage the hotel in Chiang Mai that to friendly and satisfy of the tourists. Might to solve the decadence of the environment and help the tourists have the decision to travel in Chiang Mai again.

Keywords: Green hotel; Decision of the tourists; Logistic regression

1. Introduction

During in the past, Thailand has a vision of tourism “Thailand has a leading quality of tourism in the world based on a balance of Thainess to promote the development of social economy and income distribution to the public sectors sustainable”. Defined The National Tourism Development Plan in No.2 (2017-2021), according to the principles of sustainable development no.5 are promoting the sustainability of natural resources and environment of protection and restoration to the risk of degenerate. Administrative ability to support the tourists and awareness of environmental friendliness. Promoting a culture of sustainability by honoring and protecting the identity of Thailand, traditional values and local knowledge. In

the first major strategic development of quality tourism. Tourism products and services to achieve balanced and sustainable (Ministry of Tourism and Sport, 2016). So this plan is to direct the development of tourism to attract tourists from around the world and to make money from tourism.

It can be seen that the tourism industry is a large industry and important industry of Thailand country. Due to the tourism industry can make money or create income give to the country and it also gives the many business and services to expansion. Because tourism industries have many beautiful natural and many unique cultures to attract tourists. It was also found that tourism industries have develop and growing up in 2018 cause it has the number of foreign tourists increased, in other words from 2018 it has Asia tourism come to Thailand around 21,630,601 and then increased to 23,623,500 and tourists from Europe come to Thailand increased from 5,689346 to 5,918,578 (Ministry of Tourism and Sport, 2018).

However, the tourism industry to meet the problem of degradation of natural resources and the environment. Because Thailand focused on only attracting an increase in the number of tourist and revenue. But the lack of countermeasure in term of ability to support the tourists. So to be effective to the tourist attraction to decadence (Kritsada Thiyawiwattananukool and Somskaow Bejranonda, 2016). Particularly of the famous province in Thailand as a tourists interested or tourists attraction.

As a current, tourists do not like to travel in far places because it may cause the feeling tired to travel and it may pay more than near places. Furthermore, it also has many facilities to provide a basis for the decision to travel. For example, the province as tourists interested or a tourist's attraction, it is Chiang Mai province. It has famous province to many diversities about tourism, the nature of tourism and medical tourism and Chiang Mai has many facilities to facilitate tourism whether it be the accommodation, restaurants and transportation (Wanna Wongwanit, 2003). It can be seen from a number of tourists visiting in Chiang Mai around 2,643,290 and then increased to 2,856,204 (Ministry of Tourism and Sport, 2018)

As mention previously, the tourism industry has affected both positively and negatively to the attractions of Chiang Mai whether it be income distribution to the province or more has destroyed the environment to decadent. So it has many choices can reduce the impact that to make the tourism to friendly with the environment such as the many hotel inside Chiang Mai province adapting the hotel or accommodation business that more friendly with the environment or the most people will know as a green hotel.

Therefore, using green hotel guidelines to reduce the impact of destroying environmentally. May it has the choice to solve the problem but there must be cooperation of operators and tourist accommodation in helping to preserve or protect the environment.

This research aim to study the factors that affect the decision of the tourists to stay in a green hotel in Chiang Mai. By the result of the research will be help Chiang Mai province has the way to develop a form of manage green hotel or find the strategy to solve

the problem about manage area and environment to appropriate and satisfying of the tourists about tourism industry and a green hotel to appropriate with lifestyle and culture of local peoples.

2. Research Objectives

To study the factors that affect the decision of the tourists to stay in a green hotel in Chiang Mai.

3. Research Methodology

3.1 Methodology

Descriptive statistics is the statistic to describing the characteristics of data. By describe the characteristics of a variable about frequency, percentage, mean and standard deviation.

Logistic regression to describe chance of the factors that affect the decision of the tourists to stay in a green hotel in Chiang Mai (Equation 1) and the details of the variables shown in table 1. This research have the hypothesis to predict the probability of the decision of the tourists to stay in a green hotel in Chiang Mai depends on the factors that we said (Kanlaya Wanitbamrung, 2008). The equation as follows:

Take equation 1 in equation 2 as follows:

$$odd = \frac{P_i}{1-P_i} \quad (3)$$

Take ln in equation 3 as follows:

$$ln\,(odd) = ln(\frac{P_i}{1-P_i}) \quad (4)$$

$$lnP_i - ln(1-P_i) \quad (5)$$

$$lnP_i - l\,n(1-P_i) = ln(odd) = \beta_0 + \beta_1 X_1 + .. + \beta_n X_n \quad (6)$$

The equation will be in the form of linear called logit response function to estimate coefficient $\beta_0, \beta_1, \ldots, \beta_n$ in the equation 6 by use maximum likelihood method.

$$Prob(Y=1) = \frac{e^{\beta_0+\beta_1 X_1 + .. + \beta_n X_n}}{1+e^{\beta_0+\beta_1 X_1 + .. + \beta_n X_n}} \quad (1)$$

$$Prob(Y=0) = 1 - \frac{e^{\beta_0+\beta_1 X_1 + .. + \beta_n X_n}}{1+e^{\beta_0+\beta_1 X_1 + .. + \beta_n X_n}} \quad (2)$$

Prob(Y=1) is the probability of the tourists decision to stay in a green hotel

Prob(Y=1) is the probability of the tourists no decision to stay in a green hotel

X_1 is the factor that relate with the decision of the tourists to stay in a green hotel

3.2 Data

As mention previously, the objective of researcher interested to study the factors that affect the decision of the tourists to stay in a green hotel in Chiang Mai. This research is quantitative research and uses the primary data (survey research) by collect the data from questionnaires and then bring the data to analyze for found the result to satisfy the aim of research. By the data that the researcher collects from tourists to visiting in Chiang Mai about demographic characteristics and behavior characteristics.

The data in the questionnaires that are the Close-ended Question by choosing the options to match the reality. The structure of the questionnaire can divide 2 part as follows:

Part1: The questionnaires about demographic characteristics of tourists composed of gender, age, education, status, job and the average of income.

Part2: The questionnaires about behavior characteristics of tourists composed of the objectives to travel, form of tourism, activities to do between travel, the media searched for travel information, trip expenditure, the image of a hotel that friendly with environment, green area and consideration of green tourism.

3.3 The population and sample

The population used in this research about tourists travelling to Chiang Mai by simple random sampling were 286 series that the researcher to collect the data from September 2018 to December 2018 at Chiang Mai walking street, Tha phae gate, Wat Phra That Doi Suthep and Nimmana Haeminda Road. In the questionnaire to identify the name hotel that tourists to stay and then bring to verify or investigate a green hotel or not. By referencing a database from the list of hotels that have been Green Leaf Foundation and Department of environmental quality promotion. (Green Leaf Foundation, 2009), Department of environmental quality promotion: DEQP, 2015), (Department of environmental quality promotion: DEQP, 2016) and (Department of environmental quality promotion: DEQP, 2018)

Variables	Explanation
Dependent variable	
ACC	Decision to stay green hotel ACC Determine 0 = Not stay and 1 = Stay
Independent variable	
GEN	Gender Determine 0 = Male and 1 = Female
AGE	Age (Year)
ACC	Decision to stay green hotel Determined 0 = Not stay and 1 = Stay
EDU	Education Determine 0 = No education/ 1 = Primary education/ 2 = Secondary education 3 = Bachelor's degree/ 4 = More than bachelor's degree and 5 = Etc.

Variables	Explanation
STAT	Status Determine 0 = Single/ 1 = Marriage and 2 = Etc.
JOB	Job Determine 0 = Student/ 1 = Government officer and state enterprises 2 = Private company/ 3 = Freelance/ 4 = Merchant 5 = Farmer and 6 = Etc.
INC	The average of income (Baht/ person)
Dependent variable	
ACC	Decision to stay green hotel Determine 0 = Not stay and 1 = Stay
Independent variable	
INC	The average of income (Baht/ person)
OBJ	Objectives to travel Determine 1 = To study art, culture, music, architecture and history 2 = To relaxed and avoid disorder 3 = To entertain with important festival 4 = To meet cousin or friend and 5 =Etc.
FT	Form of tourism Determine 1 = Travel alone/ 2 = Travel with another person 3 = Travel group (more than 3 persons)/ 4 = Tour group and 5 = Etc.
AT	Activities to do between travel Determine 1 = Sightseeing lifestyle and well-being of local people 2 = Natural conservation, hiking, camping and watching wild animals 3 = Health activities such as spa and therapy 4 = Pray, sightseeing the ancient remains and 5 = To relax (no collect activities)/ 6 = Etc.
MT	The media searched for travel information Determine 1 = Posts on the Internet/ 2 = Website about tourism 3 = Tourism magazine/ 4 = Tourism book 5 = Suggest from other person and 6 = Etc.
EXP	Trip expenditure (Baht/ person)
IME	The image of a hotel that friendly with environment Determine 0 = No consider/ 1 = Consider and 3 = Etc.
GA	Green area Determine 0 = No consider/ 1 = Consider and 3 = Etc.
CT	Consideration of green tourism Determine 0 = No think/ 1 = Think

Table 1 Variables in Logistic Regression

4. Result and Discussion

A study of the factors that affect decision of tourists to stay in green hotel in Chiang Mai can be summarized as follows:

4.1 Demographic characteristics of tourists to visiting in Chiang Mai. Found that the most of the tourists are female as a 51.75%. The most of the tourists are student as a 25.87% and they are 21-30 years old as a 60.84% and they also have the bachelor's degree as a 55.59%. As well as they are single as a 69.93 and has the average of income more than 20,000 Baht as a 6.08%. As a details of the variables shown in table 2

Data	Amount	Percentage
Job		
Student	74	25.87
Government officer/ state enterprises	35	12.24
Private company	67	23.43
Freelance	26	9.09
Merchant	28	9.79
Farmer	3	1.05
Etc.	53	18.53
Total	**286**	**100**
The average of income		
Less than 5,000	3	2.10
5,000-10,000	24	7.34
10,001-15,000	12	4.20
15,001-20,000	16	5.59
More than 20,000	231	80.77
Total	**286**	**100**

Table 2 Demographic characteristics of tourists

4.2 Behavior characteristics of tourists come to Chiang Mai. From the samples of research participant were 286 series. Found that the most of tourists that to visiting in Chiang Mai have the objectives of travel to relaxed and avoid disorder as a 62.24% and usually have to travel as a group (more than 3 persons) as a 34.97% and the tourists do not like to do the activity in other words just travel to relax as a 27.27% and before the tourists will go travel, they will study tourism attraction in posts on the internet as a 56.64%. In each trip the most of tourist will pay the average of trip expenditure more than 20,000 Baht as a 34.27% and considering to the image of hotel that friendly with environment, green area and they also would have considered tourism in Green Tourism for the next trip as a 98.25%, 98.60% and 98.25% respectively. As a details of the variables shown in table 3

Data	Amount	Percentage
Trip expenditure		
Less than 5,000	43	15.03
5,000-10,000	91	31.82
10,001-15,000	21	7.34
15,001-20,000	33	11.54
More than 20,000	98	34.27
Total	**286**	**100**
The image of a hotel that friendly with environment		
No consider	4	1.40
Consider	281	98.25
Etc.	1	0.35
Total	**286**	**100**
Green area		
No consider	3	1.05
Consider	282	98.60
Etc.	1	0.35
Total	**286**	**100**
Consideration of green tourism		
Don't think	5	1.75
Think	281	98.25
Total	**286**	**100.00**

Table 3 Behavior characteristics of tourists

4.3 From the result (Table 4) showed a statistically significant at the 0.10 level, the factors that affect the decision of the tourists to stay in a green hotel in Chiang Mai that finding the most of gender (female) will decision to stay in a green hotel more than gender (male) because may they respect about green hotel and attend about the environment of the hotel. Job (student) that impact of decision to stay in a green hotel by they should be attend about the green hotel to relaxed the problem or stress from learning. The image of a hotel that friendly with environment that impact with decision of the tourists to stay in a green hotel because the environment of the hotel that beautiful or better will help the tourists can decision to stay in their hotel more. Trip expenditure that impact to the decision of the tourists to stay in a green hotel because hotel that about conserve the environment or the hotel that friendly with the environment may have the cost price to stay their hotel, so to make the tourists would be pay more than the normal hotel and if the hotel that friendly with the environment, it will make the tourists have the decision to stay here or will consider to stay in their hotel again when they visiting in Chiang Mai.

Variables	Coefficient	P-value
C	-18.477	1.000
GEN	2.042**	.017
AGE	-0.033	.468
EDU	0.149	.728
STAT	0.663	.278
JOB	0.623***	.001
INC	0.000	.742
OBJ	-0.467	.153
FT	-0.351	.259
AT	0.152	.499
MT	-0.876*	.096
EXP	0.000*	.081
IME	20.433	1.000
GA	0.000	.999
CT	-5.547***	.006
R-squared = 0.183	**N = 286**	

Note: ***, **, * mean the significant at the 0.01 level, 0.05 level and 0.1 level respectively.

Table 4 The factor that affect the decision of tourists to stay in a green hotel in Chiang Mai

5. Conclusion

From the result found that the factors that affect the decision of the factors that affect the decision of the tourists to stay in a green hotel in Chiang Mai are Gender, Job, The image of a hotel that friendly with environment, Trip expenditure and Consideration of green tourism that consistency with Kritsada Thiyawiwattananukool and Somskaow Bejranonda (2016) according to the most of the tourists are marriage will have trend to travel more than single and it has consistency about if the people have more income or increasing of income will effect to the decision of the tourists to stay in a green hotel. Sangdeun Ratinthorn (2012), Nantaporn Sriwilai (2013) and Arm Nakornthab and Surachai Chancharat (2013) according to the tourists will find the tourism attraction on the internet and the tourists have the objective to travel about relaxed and consistency with Kritsada Thiyawiwattananukool and Somskaow Bejranonda (2016) according to the environment that the effect of decision to stay in a green hotel but it has contrast with Mingsam Kawsaard (2010) and Thirdchai Chuawbumrong (2019) according to the tourists prefer to travel alone more than group travel and will pay more trip expenditure too.

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Factors that affecting the export values Thailand's agricultural products to China

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Abstract

Thailand has long been recognized as an agricultural country, with the export of agricultural products playing a crucial role in the nation's economy. China, as Thailand's largest trading partner, significantly influences the export value of Thai agricultural products. This study aims to analyze the factors affecting the export value of Thai agricultural products to China by employing an econometric model with time series data from 2007 to 2016. Using multiple linear regression analysis, the study examines the impact of three key variables: the exchange rate (Yuan per Thai Baht), the price index of Thai agricultural products, and China's Gross Domestic Product (GDP). The results indicate that GDP in China and the exchange rate significantly affect the export value, while the price index of Thai agricultural products does not show a significant impact. The findings highlight the importance of macroeconomic factors in shaping Thailand's agricultural exports and provide insights into policy measures that could enhance Thailand's competitiveness in the Chinese market. Future research should explore additional variables that may influence agricultural trade dynamics between the two countries.

Keywords: Agricultural Exports; Exchange Rate; China-Thailand Trad

1. Introduction

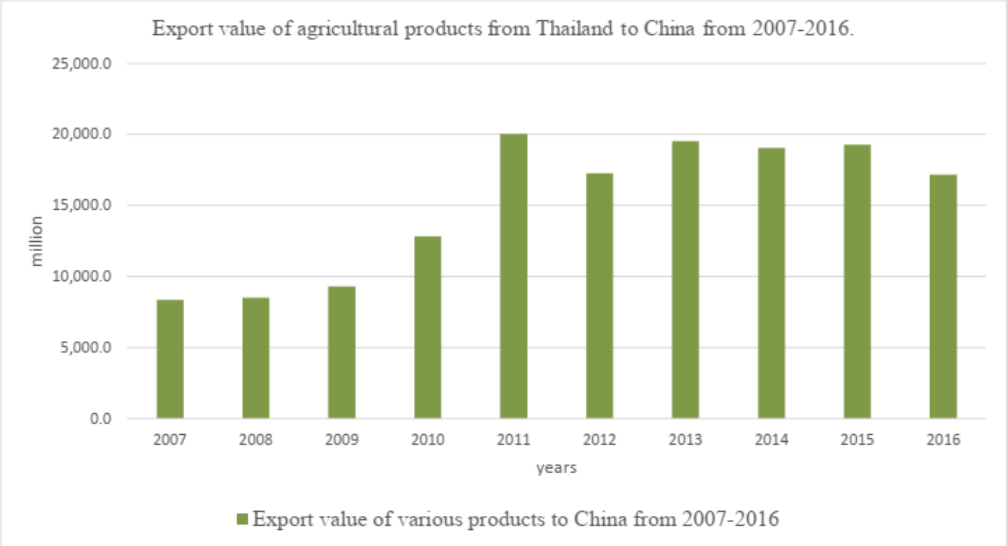
Thailand has long been recognized as an agricultural nation, with agricultural exports playing a pivotal role in sustaining the country's economy. The agricultural sector not only contributes significantly to national income but also serves as a primary source of employment for a substantial portion of the population, particularly in rural areas. Despite

technological advancements and increasing integration into global markets, the sector remains highly sensitive to both domestic challenges and external market fluctuations. Climate change, shifts in global demand, and trade policies continue to influence Thailand's agricultural trade performance. Moreover, political and economic instability, as highlighted by Naripthaphant (2017), has repeatedly affected the country's overall economic structure, leading to uncertainty in agricultural production and export volumes.

Thailand's economic reliance on exports becomes particularly evident when considering its trading relationship with China—a key partner that accounts for a significant share of the nation's export volume (Thai Biz China, 2013; Kiatnakin Bank, 2015). As China is Thailand's largest trading partner, any macroeconomic changes in China, including fluctuations in its GDP growth, shifts in domestic consumption patterns, and policy adjustments, can have immediate and far-reaching implications for Thailand's export sector. Trade agreements, tariff impositions, and logistical constraints further add to the complexity of the trade relationship between the two countries.

The Chinese market's dynamic nature implies that any changes in its economic environment can have a direct and substantial impact on Thailand's export performance (Thai Customs, 2017). Given that shifts in the exchange rate, fluctuations in the price index of agricultural products, and variations in China's GDP can alter trade dynamics, understanding these factors is essential. A depreciating Thai Baht, for instance, may enhance export competitiveness, while a strengthening Chinese Yuan can increase purchasing power in China, potentially boosting demand for Thai agricultural products. However, external shocks such as global recessions, supply chain disruptions, and trade policy shifts can counteract these effects.

Given these complexities, this research seeks to analyze the influence of key economic variables—including the exchange rate, price index of agricultural products, and China's GDP—on the export value of Thai agricultural products to China. The findings will provide valuable insights into how macroeconomic indicators shape Thailand's agricultural export trends. Additionally, the study aims to highlight policy measures that could enhance Thailand's competitiveness in the Chinese market, ensuring long-term sustainability and resilience in the agricultural export sector. By identifying the primary determinants affecting trade flows, policymakers and businesses can develop strategies to mitigate risks and capitalize on emerging opportunities in Thailand-China agricultural trade.



Source: Thai Customs, 2007-2016

Figure 1 Export value of agricultural products from Thailand to China from 2007-2016.

To study factors affecting the value of Thai agricultural product exports to China. The objective is to study the value of the yuan per Thai baht, the price of domestic agricultural products, gross domestic product of China (GDP) using the econometric model. In analyzing long-term relationships of dependent variables, using SPSS programs by analyzing multiple linear regression under the condition that the data used must be time series data. To know the relationship of variables affecting the exports value of Thai agricultural product, that show the barrier and advantages of exports for develop the export of Thai agricultural products. The economy and trade balance of the country, respectively.

2. Research Objectives

2.1 To analyze the impact of China's GDP and the exchange rate (Yuan per Thai Baht) on the export value of Thai agricultural products to China.

2.2 To identify the key economic factors that significantly influence Thailand's agricultural export performance and provide insights for improving trade policies.

3. Research Methodology

3.1 Research Design

This study employs a quantitative research approach to analyze the key factors influencing the export value of Thai agricultural products to China. The research framework is based on an econometric model using time series data from 2007 to 2016. The study applies multiple linear regression analysis to examine the relationship between the dependent

variable (export value of Thai agricultural products) and three independent variables: Exchange Rate (Yuan per Thai Baht) – Represents fluctuations in currency value, which can affect trade competitiveness. Thai Agricultural Product Price Index – Measures changes in the price level of agricultural products in Thailand, impacting export dynamics. China's Gross Domestic Product (GDP) – Serves as an indicator of China's economic growth and purchasing power, influencing demand for imports from Thailand. The econometric model is designed to determine the statistical significance and strength of the relationship between these variables.

3.2 Data Collection

This study relies on secondary data collected from official government agencies and international organizations. The dataset includes: Export Value of Thai Agricultural Products to China – Obtained from Thai Customs (2007-2016). Exchange Rate (Yuan per Thai Baht) – Collected from the Bank of Thailand (2018). Thai Agricultural Product Price Index – Extracted from the Office of Agricultural Economics (2018). China's Gross Domestic Product (GDP in Yuan) – Sourced from Trading Economics (2018).

3.3 Econometric Model and Data Analysis

To analyze the long-term relationship between the dependent and independent variables, this study applies multiple linear regression analysis using the SPSS statistical software package. The general model specification is:

$$Y_i = \beta_0 + \beta_1 VoY + \beta_2 Pa + \beta_3 GDPChina + \varepsilon_i$$

Where:

Y = Export value of Thai agricultural products to China (million Baht)

VoY = Exchange rate (Yuan per Thai Baht)

Pa = Thai agricultural product price index

GDP_China = Gross Domestic Product of China (Yuan)

ε_i = Error term

3.4 Assumptions and Model Validity

The regression model is tested for validity through various econometric diagnostic tests, including: Multicollinearity Test: Uses the Variance Inflation Factor (VIF) to ensure independent variables are not highly correlated. Autocorrelation Test: Applies the Durbin-Watson statistic to detect the presence of serial correlation in residuals. Heteroscedasticity Test: Conducts the Breusch-Pagan test to check for variance inconsistency in error terms. Stationarity Test: Employs the Augmented Dickey-Fuller (ADF) test to confirm the time series data is stationary before running regression analysis.

3.5 Limitations of the Study

While this research provides insights into key factors affecting Thai agricultural

exports to China, certain limitations exist: Limited Time Series Data: The study only covers a 10-year period (2007-2016), which may not fully capture long-term structural changes in trade patterns.

Exclusion of Other Influencing Factors: The study does not account for qualitative factors such as trade policies, tariffs, and supply chain disruptions, which could also impact agricultural exports.

Macroeconomic Variability: External shocks such as global financial crises, climate-related disruptions, and pandemics are not explicitly modeled but may influence the results.

Despite these limitations, the research methodology is designed to provide a robust quantitative analysis of the primary economic determinants affecting Thailand's agricultural exports to China.

4. Result and Discussion

In the research, the researcher use the data for 10 years because the time limit is limited in data collection since 2007-2016 because during this year the value of agricultural exports from Thailand to China is fluctuate. Therefore, would like to know which factors affect the value of Thai agricultural exports to China by testing the correlation of the value of yuan per baht (VoY), the price index (Pa) and Gross Domestic Product of China (GDP: Yuan) that affects the value of Thai agricultural exports to China by using the SPSS program by multiple linear regression analysis, that show result in table 1.

Variable	Coefficient
GDP	0.002**
Pa	0.471
VoY	0.069**

Note: ** 0.05 level of significant

Table 1 Result analysed by multiple regression method

The results of the multiple regression analysis reveal critical insights into the macroeconomic factors influencing the export value of Thai agricultural products to China. Among the three independent variables analyzed—China's GDP, the Thai agricultural product price index, and the exchange rate (Yuan per Thai Baht)—only China's GDP and the exchange rate were found to have a statistically significant impact on Thailand's agricultural exports.

The findings indicate that China's GDP growth has a positive and significant effect on the value of Thai agricultural exports, suggesting that as China's economy expands, its

demand for imported agricultural goods, including those from Thailand, increases. This result is consistent with economic theories that highlight the role of rising income levels in driving consumption growth. As Chinese households experience higher disposable income, they tend to demand more diverse and higher-quality food products, many of which are sourced from international markets. The positive relationship between China's GDP and Thai agricultural exports implies that Thailand stands to benefit from China's continued economic expansion. Therefore, policymakers should focus on strengthening trade relations, reducing trade barriers, and ensuring smooth market access to capitalize on China's growing demand for agricultural products.

The exchange rate (Yuan per Thai Baht) also exhibits a significant impact on Thailand's agricultural exports, indicating that currency fluctuations play a crucial role in shaping trade dynamics. A depreciation of the Thai Baht relative to the Chinese Yuan makes Thai agricultural products more affordable for Chinese importers, thereby boosting export volumes. Conversely, an appreciation of the Baht could reduce Thailand's competitiveness in the Chinese market by making its exports more expensive. This result underscores the importance of exchange rate policies and monetary stability in supporting the agricultural export sector. The Thai government and central bank should closely monitor currency movements and implement policies to prevent excessive volatility, ensuring that Thai agricultural exporters remain competitive in the global market.

In contrast, the Thai agricultural product price index does not have a statistically significant impact on export values, suggesting that domestic price fluctuations do not directly determine Thailand's agricultural export performance. This finding may be attributed to the fact that export prices are largely driven by external factors such as global demand, international trade policies, and currency exchange rates, rather than domestic agricultural price changes. Additionally, long-term trade agreements and supply chain structures may stabilize export prices, reducing the effect of short-term domestic price variations. The insignificance of the price index implies that policies aimed at controlling domestic prices may have little impact on export performance. Instead, policymakers should prioritize trade facilitation measures, logistics improvements, and investment in agricultural productivity to enhance Thailand's competitiveness in the international market.

Overall, the findings emphasize the critical role of external economic conditions—particularly China's economic growth and exchange rate movements—in shaping Thailand's agricultural export trends. While domestic price fluctuations may not directly affect exports, ensuring stable trade policies, enhancing supply chain efficiency, and managing exchange rate volatility are key strategies to sustain and expand Thailand's agricultural exports to China.

Moving forward, Thai policymakers should focus on strengthening trade agreements, diversifying export markets, and investing in technological advancements in agriculture to maintain a competitive edge in the global market.

5. Conclusion

This study examines the key macroeconomic factors influencing the export value of Thai agricultural products to China, focusing on the effects of China's GDP, the exchange rate (Yuan per Thai Baht), and the Thai agricultural product price index. The findings reveal that China's economic growth and exchange rate fluctuations have a statistically significant impact on Thailand's agricultural exports, while domestic price fluctuations do not play a major role.

The positive relationship between China's GDP and Thailand's agricultural export value highlights the importance of China as a primary export destination. As China's economy expands, its demand for imported agricultural products increases, creating significant opportunities for Thailand's agricultural sector. This finding underscores the need for Thailand to strengthen trade relations, negotiate favorable trade agreements, and enhance supply chain efficiency to capitalize on China's growing market.

The study also finds that exchange rate movements significantly influence Thai agricultural exports, suggesting that a weaker Thai Baht relative to the Chinese Yuan enhances Thailand's export competitiveness by making Thai products more affordable for Chinese importers. Conversely, a stronger Baht can reduce export demand. These results emphasize the importance of exchange rate stability and effective monetary policies in supporting Thailand's agricultural trade performance. The Bank of Thailand should closely monitor currency fluctuations and implement policies to maintain a stable and competitive exchange rate to safeguard the interests of agricultural exporters.

In contrast, the insignificance of the Thai agricultural product price index suggests that domestic price fluctuations do not directly determine export performance. This may be due to the dominant role of international market forces, long-term trade agreements, and supply chain structures in setting export prices. Rather than focusing on price control mechanisms, policymakers should prioritize trade facilitation, agricultural productivity enhancements, and infrastructure development to sustain long-term export growth.

Based on these findings, several policy recommendations can be made to enhance Thailand's agricultural export competitiveness in the Chinese market. First, Thailand should strengthen trade agreements with China to ensure favorable market access and reduce trade barriers. Second, exchange rate management should be prioritized to prevent excessive

currency volatility, which could negatively impact exporters. Third, investments in modernizing agricultural production, logistics, and digital trade platforms will help improve efficiency and maintain Thailand's position as a key agricultural exporter. Finally, market diversification strategies should be explored to reduce over-reliance on China and mitigate risks associated with potential economic slowdowns in the Chinese economy.

In conclusion, this study highlights the critical role of external economic factors—particularly China's economic growth and exchange rate dynamics—in shaping Thailand's agricultural export trends. By adopting proactive trade policies, enhancing competitiveness, and improving market accessibility, Thailand can strengthen its agricultural export sector and ensure long-term sustainability in the global marketplace. Future research should explore additional variables, such as trade policy changes, non-tariff barriers, and the impact of global economic crises, to provide a more comprehensive understanding of Thailand's agricultural trade dynamics.

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